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SKYWAYS
TO A JUNGLE LABORATORY

An African Adventure



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Skyways
to a JUNGLE
LABORATORY

An African Adventure

By GRACE CRILE



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TO
THE CHIEF

PUBLISHERS' NOTE

When Mrs. Crile accompanied her husband, Dr. George Crile, famous American surgeon and research scientist, on his recent expedition to Africa, she kept a personal record of their journey by air, from London to the laboratory established in the Great Rift Valley, and of the days spent deep in the jungle. *Skyways to a Jungle Laboratory* tells the story of their flight and of the adventures of their expedition in the richest territory in the world for abundance and variety of animal life.

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LONDON TO PARIS

NOVEMBER 24, 1935

THE fateful day had arrived. For two nights last letters had unconsciously wafted us back into all of the home problems. We had turned over and over in our minds the proper insurance quotations against the loss of life, the loss of an eye, and the loss of a limb; but this morning was like a leap into the blue. At last the adventure was at hand!

At seven-thirty we were called and were told it was a bright day. Apparently these few rays of London sunshine made a great impression upon everyone, for when the Chief (my husband, Dr. George Crile) went downstairs after an eight-o'clock breakfast to ask for our bill, everyone greeted him with "A bright day, Sir."

The bill could not be had because "the under-clerk prepares that, and he does not come until nine o'clock, Sir." I suppose they would rather have foregone the payment of that bill than break the tradition.

We left the hotel at quarter to eleven for the Airway Terminus at Victoria Station where an official of the Imperial Airways told us, in minute detail, about each ticket, how we were to hand it in, and what we were to say. Either a lot of "Dumb Doras" fly, or else the Imperial Airways feels sympathetic toward their sisters across the seas and wants to lead them by the hand.

There was, however, a problem. We had a camera packed away in our suitcase, and cigarettes (an offense against Italy) in another; and we did not have an Italian visa!

Although the Imperial Airways in New York assured us that an Italian visa was not necessary, and Akers-Folkman Company, of Cleveland, said the same, the Imperial Airways in London did not want the omission of such a formality to fall upon them, so a document was prepared in which we said that we knew we did not have an Italian visa and that the omission was no fault of the Imperial Airways. That seemed to straighten out matters, although we were cautioned "to tell the Captain about this" when we arrived in Brindisi.

French cuisine on the *Île de France* and Devonshire cream at the Carlton Hotel had given us many misgivings about our weight, especially when we learned the high rate of transportation on the Imperial Air-

ways of everything over 100 kilograms (221 pounds), the weight budget allowed each passenger, including his luggage; so we decided to repack and to take only three suitcases with us.

“Step onto the scales, Sir,” was the order. “With my coat on?” “With your coat on, Sir, and your book in your hand.” Not an inch or an ell were they willing to give us, and the face of those scales was turned toward the official.

“You are six kilos to the good, Sir. Remember that when you come back. You haven’t much leeway there.” It certainly was a kindergarten we were attending!

About noon all passengers for the Imperial Airways were packed into a “charabanc,” not a bus—because “a charabanc is the larger”—and taken to Croydon, the Air Port of London.

Visibility was so poor, one could not see across the Square, but even the ticket agent at Croydon was such an optimist that he said, “This is a bright day, Sir, quite the best we’ve had for some time.” This “bright day” was so foggy one could not even see the sun. There was, however, a reddish glow throughout the atmosphere as if there were a big fire nearby.

At Croydon, there on the tarmac, the great Heracles was, its four engines roaring. As we mounted the steps

to enter this huge plane, our Captain, neatly attired in the dark blue uniform of the Imperial Airways, swung himself into the cockpit.

This 2,200 horse-power biplane carried a crew of four. It had two cabins, or compartments, with seats for thirty-eight passengers. We had the first seat in the first cabin, with a table in front of us and a small shelf of books overhead. The kitchenette and lavatory were between the two cabins. The chairs were roomy and comfortable, and each one had a pillow and warm woolen rug. A reading light was beside each chair, and the windows were shaded with pretty silk curtains.

We rose so easily, so effortlessly, I hardly knew we were off—not an air pocket, not a quiver, and there was no more noise than in a Pullman train. A hot luncheon of soup, meat, vegetables, and dessert was served—without cost and without fees!

At no time did we exceed 2,000 feet in altitude or 120 miles an hour in speed, and as we winged our way, the shadow of our plane in the mists below followed us like a great black bird. The pretty English landscape melted into the Channel, and Old France rose out of the sea in a great white cliff. We crossed from Hastings to Dieppe. The Channel interested me, for instead of seeing the waves rolling in unbroken succession, it was just a troubled surface of water that we looked

down upon; yet the whitecaps indicated a choppy passage for the many craft below.

England had been foggy. We constantly looked through a floating sea of mist, but in France the sun was really shining and we could see clearly the sleek cattle in their pastures and their water-holes, the stacks of hay, and even the manure upon the fields. We could see the beautiful stretches of forests, the quaint toy villages, the straight roads and serpentine rivers, and occasionally the big country estates.

In England, hedges outlined the fields; in France trees outlined the great roads. Flying over the Channel was similar to flying over Lake Erie from Cleveland to Detroit. It took about thirty-five minutes.

Just as the sun was beginning to color the clouds, when visibility was so good we seemed to be able to see the whole world, the steward announced, "Please prepare to land, ladies and gentlemen. There is a fog in Paris and we will land at Beauvais." In a moment, the engines slowed down. There was a momentary jerk, a sudden descent, and we were bumping along a muddy field in the midst of nowhere.

Before our baggage was off, four big planes swept in, and poilus in their soft blue uniforms, peasants in Sunday attire, children, and passengers became an interested and interesting throng. A red-haired pas-

senger called attention to herself by making special demands. "An automobile must be ordered immediately." She could brook no delay. It was about twenty minutes before a bus came, and then, in spite of the fact that there were other seats left, only "Empire passengers and their luggage" were transferred. A Princess plead and tried to bribe; Lady L. almost made a scene; Frenchmen talked so fast and gestured so wildly that I was sure there would be a fight; but England, in the person of our young steward, was adamant—"only the Empire passengers and the Empire mail can be transferred." That was what the "Captain" had told him, and although it was very "awkward" for him, that was what must be done. Thus is England governed.

It was no time at all before we ran into fog as thick as night. It was so damp with fog that everything was dripping. We could not see the side of the road. All of the lights looked like tiny new moons. To motor along narrow, winding French roads, lined on both sides with big trees, dashing through villages, the walls of the houses rising right from the curbs, while one's machine is driven by an excitable Frenchman who, when he talks, gestures with both hands, is more bumpy, and, I am quite sure, more treacherous than any airplane. However, we reached the *Gare de Lyons*

with four minutes to spare for the Paris-Brindisi Express.

Our old friends, Dr. and Mrs. Henri Welti, of Paris, with flowers and candy, were there to meet us, and wanted to be of assistance. But there was nothing to do. The Imperial Airways does it all. We had two communicating compartments in the Imperial Airways Special Car. Each compartment had a comfortable bed with a really good reading light, a weird blue night light, a wash stand, a mirror, scented soap, and a bottle of water with a trick stopper which fell out when you picked up the bottle. Our luggage was in our rooms, and we were off, but not before we had pinned the Weltis' violets and dark red carnation on the lapels of our coats.

PARIS TO BRINDISI

NOVEMBER 25, 1935

THE Paris-Brindisi Express is always a delight. Although it takes two nights and a day, it carries one seemingly so swiftly into the warm sunshine of the Italian Riviera, along the blue Mediterranean,

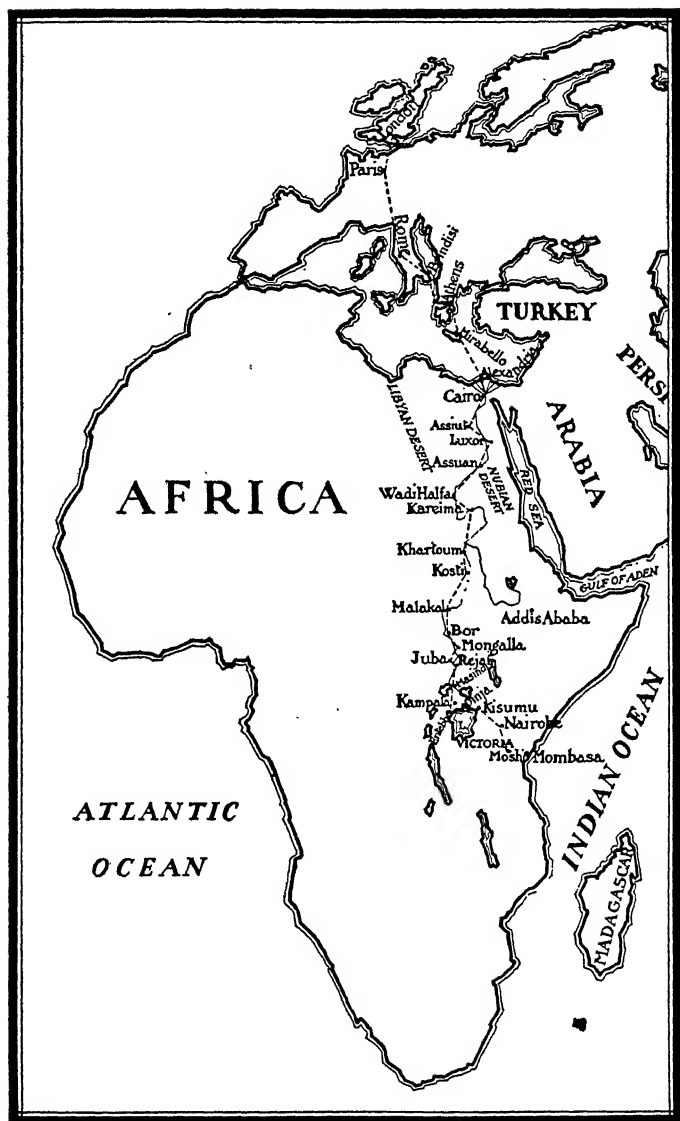
past the olive-covered hills, the great marble quarries, the beautiful Duomo and Leaning Tower of Pisa, that it is hard to know through which window to look; for here is a familiar hill town on the right and another on the left, until finally the Campanile of Giotto is glimpsed, and then the great dome of St. Peter's in Rome.

Rome to Brindisi proved to be a noisy run. We stopped at many stations, and in every town there seemed to be a celebration; so although we turned in early, it was ten minutes of two when we were last conscious of the time, and at three-thirty we were called.

BRINDISI TO ALEXANDRIA

NOVEMBER 26, 1935

NOTHING could have been more dramatic than our taking off from Brindisi this morning. It was black night and raining when we stepped from the train. Eleven of us huddled together on the platform of the station until a beautifully booted and leather-coated Imperial Airways Captain said, count-



ing noses, "Are you all here? Well, then, follow me and don't stray." So away we tramped, every footfall resounding in the night, going none of us knew where, talking none of us knew to whom; but following our young, blue eyed "Shepherd," as the Chief calls our Captain.

As we entered the *Hôtel Internazionale*, a sleepy-eyed clerk said, yawning, "Breakfast is in the dining-room," and like Canterbury Pilgrims we sat down to an omelette each, and unpalatable, but hot, coffee, and found out a little something about each other.

After breakfast, in total darkness, we boarded a small launch and putted our way to the Customs, where we waited until the first streaks of dawn lighted the Bay sufficiently for us to take the launch out to the flying-boat which lay in the harbor.

Instead of one of the new four-engine seaplanes with a cruising speed of 100 miles an hour, we were taking a fifteen-passenger, three-engine seaplane, the *City of Khartoum*, with a cruising speed of but 80 miles an hour. England has had a bit of hard luck lately, and one of her flying-boats, the one we expected to take, was destroyed by fire a few days ago while lying in Brindisi Harbor.

We had hardly taken our seats in the plane when the big propellers were whirring, and suddenly we

were off. A glide over the sea—bumpy to be sure—then with a roar of the engines we tear through a swirling mass of water so high that it seems to engulf us; then suddenly the floats lift, the great ship rises, we breathe more easily, and away we go, like a big bird, skimming the blue sea. Dozens of islands that look like the crazy tops of submerged mountains pass as we fly. These Ionian Islands are indescribably beautiful in their brilliant coloring. Everywhere the foliage is gay, in yellows and reds, and against this stand the stately stone-pines and the sad, solemn cypresses.

As we look down on these rocky crags, we wonder how anyone can eke out a living here. We see few cattle, but intense cultivation, endless olive groves, and terraced vineyards. Houses and gardens are built right to the water's edge; in fact, the soil has been carried to the sea. Serrated and fantastic in shape, these rocky islands are a gorgeous coral pink in color, and the water curling near their jagged edges is always a brilliant turquoise blue, suggesting there may be copper beneath those piles of tinted rock.

A leper colony on a barren isle seems rather grim. Even the soil looks scarred, and there is not a tree to add to the lepers' colorless existence.

Distant Fano; wooded Corfu; the Gulf of Arta where Octavius and Agrippa conquered Antony and

Cleopatra; old Ithaca, where the wily Ulysses hid his treasure in a cave; Missolonghi, which still holds Byron's heart; Patras, with its ancient fort; the deep Gulf of Corinth; Corinth itself; the shining summits of Helicon; the coast and promontories and green hill-tops of the Peloponnesus; snow-capped Parnassus, at the base of which the Delphic fires burned; the 250-foot deep canal dug out of solid rock, begun by Nero; the island of Aegina; the narrow Gulf of Eleusis—all of these pass beneath our gaze until finally the great plain of Attica stretches before us, and there lies Athens itself—nestled along the sea.

The hangar at Athens was at the far end of the city. We stopped there about ten-thirty, to refuel. As we left, a mist hung over the ancient city, utterly enshrouding it; so we caught not even a glimpse of its famed Acropolis.

From Athens, out into the green Aegean we flew. Beneath us stretched, like scattered leaves on an autumn day, the long chain of Cyclades. So many and so close to each other were these Aegean islands, that one had the feeling of flying over a lake rather than a sea.

We arrived at Crete about three, and stopped at Mirabello, where we refueled and had tea on board The Imperial Airways yacht, leaving in half an hour

for our long pull across the Mediterranean to Alexandria.

Our entire day was spent circling above beautiful islands, hovering so close at times that I could almost look into the houses, and then we reached the open sea.

This morning we had a breakfast of sandwiches and good coffee on the plane; a lunch of cold meats, salad, and cut-up fruit; and, at five, in spite of having had tea served to us at Mirabello, we again had tea, delicious pastry, and sandwiches. There were no air pockets. The plane has been steadier than a ship on a calm day; so we indulged, and lucky it was, for a head wind slowed us down, causing the plane to drift some forty miles out of our course.

For hours we flew in darkness, looking out into the black night and over the black sea—the long flames from the exhaust from our engines being our only light. It was cold. There was no moon. We scanned the heavens for familiar constellations, wondering by what star our “Shepherds” were taking their bearings, when suddenly we felt the plane turn, and there—low in the East—were the lights of Alexandria.

The Mediterranean was so mirror-like that it was difficult to see the floor and gauge our height. Over and over again, rockets were shot into the air and we

watched them—red—blue—green—shoot by our window and drop—drop—finally fizzing out in the sea.

As we circled over the harbor, thousands of lights twinkled. The British Fleet was there. As our engines slowed, we held our breath, but a quick turn—a bump or two—and we had dropped into a niche which seemed as if it were never going to be large enough to hold us.

Although after ten, customs was the order of the night. Beautiful Turkish-trousered officials served us tea while we waited, for the Imperial Airways takes all the stress and the strain. Passengers never see their tickets, their passports, nor their cameras. Cameras have to be sealed; cigarettes, concealed. Passengers may even buy currency coupons through the Imperial Airways. These coupons are valued at five shillings each and are made up into books of ten. They are a great convenience in buying postal cards, stamps, or any small necessities as they are exchangeable for their equivalent in the local currencies through which the Imperial Airways passes.

A bus met us at the hangar at Alexandria, and we were quickly taken to the Hotel Cecil where, though late, a delicious full course dinner was served. Then long-robed “Abduls” who seemed to be masquerading in old-fashioned nightshirts, red sashes and fezzes, took us to our shuttered and mosquito-netted room, and we

were instructed that our breakfast would be sent up at two-thirty, as the bus would leave for the hangar at three. It was then midnight.

ALEXANDRIA TO KHARTOUM

NOVEMBER 27, 1935 .

HALF past two seemed pretty early, but Abdul was at the door with our breakfast, and the Office was calling us on the telephone; so there was nothing to do but get up.

It was pitch black when our Captain counted noses and said, "You are eleven," and led us out into darkness to the bus which was to take us to the hangar.

At the hangar we were delighted to find that our plane was to be *The Hengist*, one of the "Eight Big Sisters of the Air." There are two fleets: the Eastern Type, known as the Hannibal Class, which carries twenty-four passengers, and the Western Type, known as the Heracles Class, to which *The Hengist* belongs. These planes carry thirty-eight passengers. So we settled down in one of the "Big Eight."

The Chief and I have front seats in the fore cabin. The chairs are adjustable and can be dropped down like a dentist's chair. Yesterday, the chairs in the seaplane had little head rests with a ridge around the edge; so, if one slept, one's head could not roll about.

Our plane today has a table in front of each chair. The seaplane yesterday had trays that could be pulled down and which were attached to the back of each chair. Each cabin today has a small library of good short stories, detective and ghost stories, and tales of adventure and exploration.

Instead of china, a pretty composition ware is used on the Imperial Airways. This is piled into a basket after meals and washed at the final stop.

As for food, we have the utmost attention. Already, today, we have had three breakfasts and it is now only half after ten: Fruit, coffee and rolls in our room; delicious broth and a cracker, about nine, on the plane; and an "English breakfast," consisting of eggs, cold meat, rolls and marmalade, coffee and fruit, at Luxor while we were refueling.

Cairo we saw only in the misty dawn, but even so, we could follow the beautiful triangle of green—the Delta of the Nile, the native settlements, and the mosques with their walled enclosures and graceful minarets.

As we moved toward the desert, dawn broke, giving us a rosy view of the Pyramids of Gizeh, glimpsed through a window in the clouds. Farther on, we saw the great stepped pyramid of Sakkara, and then more and more groups of pyramids—I never knew there were so many—and finally, a last one, out by itself, alone in the desert sands.

As the last pyramid faded from view, the clouds gathered and we flew up, up, until finally we were amidst great puffs of clouds, piled high one upon another, this billowy sea being so illumined by the golden light of early dawn that it resembled the tawny billows of the desert itself. And is the desert billowy? Sometimes there will be soft stretches as mobile as the ocean beach, then beautiful undulating dunes down which one longs to tumble, then there will be rough, crinkly stretches that look scarred and grim, then forbidding—awesome stretches like the black basaltic hills near Luxor. For miles it reminded me of the Painted Desert of our own Southwest—just a mass of mess—as if someone had started to fashion a world, grown discouraged and quit.

To me, the interesting part of these basaltic and granite hills is what I can see in them myself from the strange erosions of time. I can see the great paws of figures like the Sphinx; I can see huge colossi like the

statues of Memnon; I can see strange faces and seeming temples carved in the soft rock. If I, why not those ancient peoples? I believe that is why, for no apparent reason, they carved these great figures out in space.

Sometimes one sees, right in the midst of this rugged basalt, whorls of smooth sand, fashioned as smooth by Nature as delicately burnished ivory. At times it looks so soft that I want to touch it, as one does velvet; and this, in contrast to yesterday, when in passing over the mountains the jagged rocks were so cruelly sharp that they seemed to be waiting to dismember intruders.

Although usually we fly at an altitude of about 2,000 feet and at a speed of about 120 miles an hour, at times we fly only a few hundred feet from the ground, and so slowly that it seems as if one could shout to a person below and receive an answer.

Near Luxor this morning, I missed the Temple of Thebes, the Colossi of Memnon, and the great silent gorge that holds the Tombs of the Kings, as I was on the wrong side; but Karnak was right under me, nestled on the Nile. I could have dropped an apple on her bosom.

I have never sensed this Nile Valley before. The Nile Valley, of course, is Egypt; but I did not realize that it is a great depression and that, like the Rift Val-

ley, there are two high escarpments, one on either side, and that all between—desert, cultivation, cities, rivers, temples, and the mausoleums of ancient Kings—is Nile Valley.

One wonders if this country was desert when the Pyramids and these ancient mausoleums were built? Why would people go so far out in this sandy waste to escape robbery of effects after death? Rather would they seem to be inviting it.

The cultivation in this Nile Valley is intensive; it is beautiful cultivation. Sometimes it extends for miles in length and several miles in width, and tucked away in the midst of its verdant green are cities of nothing but mud houses, shaded by palm trees. The houses, the fences, the corrals for the cattle and, I am sure, the beds and chairs, are made of mud, for mud hardens in this warm dry sun. Many of the houses, like those of our own Hopi Indians, have no roofs; they are merely small compounds divided by high fences, to serve for the camels and the family. In some, a corner is shaded by loose straw placed across the walls; in others, there are roofs over a portion of the compound.

We now are climbing up, up, into the sunshine and the sky—3,000 feet—3,500 feet—and there is nothing

but sand, sand, desolate, tawny sand, melting finally on either side, into the far-distant escarpments and the dim blue horizon.

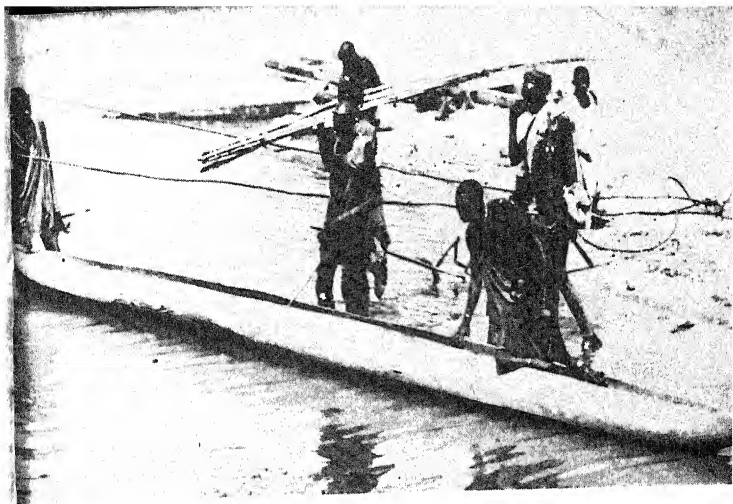
Yet, even as I write, it suddenly changes, and here beneath me are great whorls of slate-gray rock, as if oceans had made whirlpools here, eons ago. They are wrinkled-looking, these great rocks, as if they were elephant hide. I wish I could walk over them. I wish I knew if they were soft and yielding, or hard and resistant.

It is getting jiggly—air pockets, this. This is why our “Shepherd” is taking us up. As I look down, the sands beyond are etched into the most beautiful flowing designs of branches of trees, of conventionalized flowers, yes, even of the lotus itself, all patterns of the winds.

We stopped at Assuan for fuel. Assuan is the borderline between Egypt and the desert beyond. The First Cataract is at Assuan. We flew directly over the great dam, glimpsing the sheer granite banks of the river, honey-combed by time.

Then over Shellal and Wadi Halfa we flew; but I could not locate the Ruins on the Island of Philae, nor the rock-hewn Temple of Abu Simbel. A little south of Wadi Halfa, we passed the Second Cataract.

The natives along the Imperial Airways in Egypt



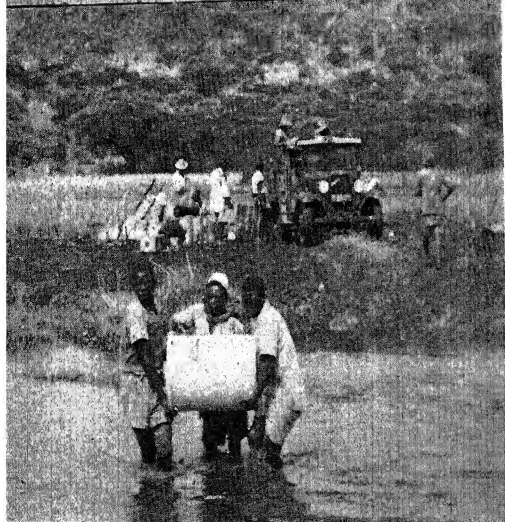
SHILLUKS *Preparing for a Day's Fishing*

PHOTOGRAPH BY ARTHUR B. FULLER

THE CONE-SHAPED HUTS of the Dinkas Are Built on Stilts

PHOTOGRAPH BY ARTHUR B. FULLER





ALMOST BOGGED
PHOTOGRAPH BY
W. HARRISON CARR

5-GALLON JARS to

dress as if for a wedding, in clean linen with a colored sash around the waist, and their manners are dignified and pleasing. These are wage earners.

At Wadi Halfa, which is in the Egyptian Sudan, the native official, who occupied a little tent out in the midst of the desert and was in charge of customs, took his official job seriously. He was in uniform.

After we had signed our names, been dismissed, and climbed once again into the plane, we were summoned to return at once. Naturally, we wondered about our quota of cigarettes and our camera, and made up our minds we would give the official our cigarettes rather than pay a high duty to each tribal state through which we passed.

When we arrived, this ornamentally dressed official, a big fellow, flanked on each side by solemn looking natives in uniform, ordered us to step forward, as he had a question to ask. We inwardly cursed the cigarettes, and stepped forward, prepared for the worst.

Everyone in the office was at attention. One could have heard a pin drop. Very solemnly, the official addressed the Chief.

“What I want to know, is this: Does ‘W’ in your name stand for William? If not, what does it stand for?”

The Chief replied, "Washington."

"Oh, The Great! The Father of his country!" was the retort of the official, as he smiled and gave the Chief a look as if to say, "A fellow with such a funny name as George Washington certainly would have no cigarettes."

For late tea, we stopped at Kareima, in a little tent almost engulfed in sand, where silent Arabs served us. All meals on the plane are pretty much alike, but at the guest-houses there is always the air of a party. Places are set for the exact number, and the linen is as white as the natives' teeth. Huntley and Palmer's biscuits, tea, cake, orange marmalade, all the Englishman's favorites, are there.

The Bedouins of the desert, slim-limbed and bare-footed, are a strangely shabby and slovenly looking people. Wrapped in yards of dirty cloth, all ends flapping, one sees them from the plane, jogging along in the distance on disconsolate-looking donkeys, followed by mongrel dogs; but when the plane lands, they rise—men, women, children, and dogs—seemingly right out of the ground. There are no huts; there are no tents. One wonders where these Bedouins live and what they eat.

In the same way, out in the wide desert, away from

everything, a native village suddenly springs into being. One sees no cattle, no cultivation, and often not even water. Perhaps, as in Biblical times, they live on locusts and wild honey!

When we left Kareima, it was sunset-time. As we climbed into our places and emptied our shoes of sand, the ground was covered with flares.

A few miles south of Kareima we passed the Fourth Cataract. The strange basaltic formations, sandstone hills, and little black mountains are less frequent now and both sides of the river are intensely cultivated, the sluggish stream winding sinuously through the vivid green. Once again, a pink glow slowly settled over the golden sea of sand. The Chief and I watched the skies become a gorgeous turquoise blue with rosy, curling edges that faded gradually to shining copper. Then as night came on, deep purples engulfed the shining gold, until the desert resembled the dark sea over which hung the Turkish Crescent.

At nine o'clock we reached Khartoum, the capital of Sudan—"Kitchener's Khartoum," for he rebuilt it. Khartoum is beautifully situated at the junction of the White and Blue Nile. Flares lighted us to the ground and immediately we were taken to the Grand Hotel. When we arrived, men and women were sit-

ting outside on the veranda and in the garden, at little tables, sipping long drinks. The lazy atmosphere reminded me of Singapore.

The reservations for the "Empire Passengers" are always ready upon their arrival and they are usually the best in the house, but tonight although our room opens onto a wide covered veranda, it is stuffy and hot. However, I have discovered a black knob that starts a large fan in the middle of the ceiling, similar to those one sees in India.

A notice in our room cautions guests never to leave their doors unlocked; but our doors—and we have two of them—have no keys!

We were all glad of dinner: 1,285 miles in one day, when it is from two-thirty A. M. to nine P. M., sharpens the appetite. The Chief's and my shoes are worn and torn from walking to guest-houses in the desert sands, and they are all the "civilized" shoes we have! I have always thought the desert sandy, but today it was gravel that filled our shoes.

After dinner the Chief had a most interesting visit with Mr. Webb Miller of the United Press. Mr. Miller has just returned from Ethiopia, where he has been with the Italian Army.

Mr. Miller stated that many of the natives in Ethiopia, even little boys of ten, carry rifles, but few have

ammunition. The natives, of course, are nomads. They are used to walking, but not to lifting. So when they were employed by the Italians, it was found they could lift very little. The Italians are teaching the native boys to work, but working is new to them. They have never before used a tool, and are learning to break stones with hammers.

The high altitude of 8,000 feet makes the climate of Ethiopia very trying, and white men become easily fatigued. During the day it is excessively hot, but the nights are cold. The terrain is so difficult that a road which the Italians have recently built has hundreds of sharp curves in thirty miles, and there being four or five inches of pulverized earth, the dust is intolerable and makes motoring and trucking exceedingly dangerous. The line of communication is about 200 miles in length, but by digging wells about twelve feet deep, water is available.

The native Ethiopians plant just enough "mealie" for their own immediate need because if they have a surplus, it is stolen. This fact made an unexpected difficulty with respect to native supplies for the Italian Army.

Mr. Miller recounted with great amusement the formal presentation to him of a gift by an Ethiopian Chief. It was enclosed in an envelope and was offered

with great ceremony. It was the personal card of the Ethiopian Chief, printed for him by the Italians. Never having seen a personal card or an envelope before, he thought he was making Mr. Miller a notable gift.

KHARTOUM TO JUBA

NOVEMBER 28, 1935

WHEN we left the Grand Hotel this morning, it was too early even to buy a stamp. Only the softly slippered native servants in their stately turbans and long white gowns and sashes were about.

So well trained was our "Abdul," undoubtedly through the experience of erring Airways passengers, that when we left the room, he, not I, looked in every drawer, in every nook and cupboard, under the pillows and mattresses, even under the bed; then with a "no," he smiled and seemed satisfied.

As we motored in the cool dawn to the flying-field, we saw many natives coming to work, some on little donkeys, others afoot, but all, like dark phantoms,

shrouded in trailing cotton cloth, their turbans unwound and draped over their heads, around their throats, and over the lower part of their faces, to protect them from the cold.

The plane was off at six-forty A. M., and we had a fine view of Khartoum, and of its many grass tennis-courts, polo-fields, palaces and public buildings, as there is a large English colony in Khartoum.

Early flying is cool and smooth. Midday flying is rough and bumpy. In the early dawn the light is clear and restful. At midday the whole atmosphere twinkles: it is even difficult to see steadily through one's field-glasses.

One does not really mind the heat in the planes as there are tubes above each seat which can be adjusted so that the air will blow down on one. A window too may be opened, even on a seaplane! If it is cold, a heating device in the floor is easily adjusted to give comfort.

The flight this morning as far as Kosti was over scrubby Arizona-like country. It was brown as one looked down upon it, as the grass is now high and dry. It is called "Bush Country," but that means sparsely covered with trees rather than with forests.

We have crossed and recrossed the Nile. We have flown right down it, then lost it for a while. This is

still the White Nile over which we are flying, but it is always muddy. Occasionally we see little native settlements of round, beehive-like huts built from the river mud. Usually, a group of two or three such huts are within one compound.

We reached Malakal at ten-thirty in the morning, skimming low over the Nile. We then turned sharply and flew back over it again, almost swishing its surface as we made our landing.

Immediately chocks were placed against the great wheels, the giant tires were covered, and a large red tank on wheels was rolled out by the natives. The tall native Chief broke a hole in each petrol tin with a big, ugly knife, natives swarmed in to watch, and we were refueled.

In the meantime we were invited into a cool, screened tent for lunch. Here tables were spread and delicious Nile fish, veal, potatoes, beans, a compote of mixed canned fruit, and coffee were served on pretty Airways china. This is England—off at the end of nowhere.

Near the air fields, the natives usually are in “formal dress”; otherwise, nakedness when it is hot, and ashes strewn over their naked bodies when there are insects or it is cold, seem to meet their needs. These

Sudanese are as black as ebony. Their skin is so dry, it reminds me of crackly china. Many of the men have scars, like sabre cuts, across their cheeks.

Everyone we have talked to and everything we have read has said that we would see game in the Bush Country from Malakal on; but, instead, we have found grass fires everywhere and we had to climb over 8,000 feet to get visibility, so lost all chances of seeing game.

In the desert there were no fires, but after passing into the region of water, where there are plants, there were sweeping fires. In order to get out of the range of the smoke, our plane was driven higher and higher until we were literally on top of the smoke and could look upward and see the blue sky, and downward, and see only the impenetrable pall of smoke.

Most of this country between Malakal and Juba is called "The Sudd"; but so also is the floating vegetation which almost obliterates the Channel of the Nile, leaving it a wide stream of verdant green or a great marsh.

The Sudd is one of the largest and most deadly swamps in the world. Through it the Nile slowly twists and turns in so many directions that as we look down all semblance to a river is lost and only lagoons

remain, glinting in the sunlight, like so many big eyes. Here and there are spots of brown and as we look through our glasses we find they are fantastically shaped mounds of earth, some sparsely covered with low bush. They are ant-hills, the many-chambered termitaries of the white ants.

Amid these swamps the jet-black, long-legged Shil-luks live, and from their dugouts and shallow, reed boats spear fish for food. Their pointed, beehive huts are clustered close together, in small villages, right on the river bank; but the cone-shaped huts of the Din-kas are built on stilts, in small groups, among the high reeds. These Nilotes, through famine subsistence, are so fashioned that it is as if they were cast in a mould. Like animals they eat only to live, therefore are uniform in their development.

Herds of elephant are usually seen in the Sudd. Here also lumbering hippos wallow, glassy-eyed crocodiles bask in the sun, large water-snakes creep in and out of the high tiger-grass and feathery-topped papyrus. Here also myriads of mosquitoes swarm. How can naked man survive!

The Captain told us that he was flying high on this trip because, if he did not, we would have a very rough passage. He expressed regret that we were too high to

see the elephants, but said that ever since he had stampeded a herd by flying low, he has taken no chances. These men take one week's service to Africa, the next week to India; they make their headquarters in Cairo.

We arrived at Juba about three in the afternoon, in time for tea on a veranda facing the tennis-courts and a garden filled with flowering tropical shrubs.

Juba is the new capital of Mongalla Province; it is the terminus of the traffic on the White Nile and is near the Congo. Otherwise it can boast of little save a pleasing water-front and extensive barracks.

The bedrooms of the hotel are prettily furnished and each room has a screened veranda and an electric fan; the beds have adequate mosquito-nets. We luxuriated in hot baths and by seven-thirty were ready for the formal course dinner.

During dinner a radio played in the next room, and we heard quotations of the various stock-exchanges the world over; so we are not far away from everywhere, after all.

JUBA TO NAIROBI

NOVEMBER 29, 1935

AGAIN, we were called at two-fifty in the morning, and left the hotel, by bus, at half after three. In the night, the Chief and I had been wakened by the weird laugh of hyenas. We were speaking of this while driving along, when a toothless but rather able-looking man said in almost unintelligible speech that he had heard them too, and that they must have been right in the hotel compound.

I am quite sure of it, as we had hardly left the hotel when a beautiful leopard leaped in front of the car and ran across the road into the grass. The lights of the car so illumined him that we could see his spots. This started our friend off, and we found he was responsible for the elephants of the district. He has to shoot the rogues. This year he has shot eight. He thinks rogue elephants are sick elephants. He says they invariably have wounds or abscesses, and that they sometimes attack natives. Several years ago one ran a tusk right through a woman and into the baby on

her back. The mother was killed instantly, but the baby recovered, although it is deformed.

In all, this man has shot eighty elephants. He shoots them through the brain, always on an angle with the eye.

He said that around Juba there has been quite a bit of difficulty with the lions. Only the other day a native was in his compound, sitting in front of his fire, when a lion leaped upon him from behind and started away with him. An old woman was near by. She jumped to her feet and with shouting and vigorous pounding with her pipe so frightened the lion that he dropped the man.

It was still dark when we climbed into the plane at Juba, with the promise of breakfast at Entebbe, some three hundred and forty miles on.

Most of the passengers wrapped themselves in their blankets and completed their night's sleep, but the Chief and I watched the world slowly waken to a carnival of color which finally rimmed the entire horizon.

There is a magical quality in the atmosphere of the early dawn; there is a thrill in the riot of color, and the bigness of mere space gives one a contented sense of detachment.

As we sped on, we looked down on many native vil-

lages, pink in the early morning glow. The huts were huddled together, some five to twelve in a compound. Though round, they had square thatched roofs and now that bush is more prevalent, the bomas, or hedges, about the compounds were built of live bush which makes quite a formidable protection. The soil must be more rich in this locality, or the natives more industrious, as we saw many little squares and odd shapes of cultivated land, and I recognized bananas as well as "mealie" growing.

Just before the plane turned to swing into Entebbe we spied, slowly sinking in the marsh, a small monoplane, its silver wings gleaming in the sun, like those of a great dragonfly. Instinctively the Chief and I both listened for the reassuring, even hum and drone of our own stalwart engines. As we taxied over the landing-field our attention was arrested by a splash of purple. It was bougainvillea, climbing over the porch of the pretty little guest-house.

Entebbe is charming. Kampala is the Capital of Uganda but it is served by the adjacent airport of Entebbe. A beautiful landing-field at Entebbe brings one almost to the door of the hotel, where we breakfasted at nine on luscious pineapple, the best little finger-long, sweet bananas I ever ate, bacon, eggs, sau-

sages, and coffee. The hotel was clean and attractive, and we all left wanting to return.

The flight from Entebbe to Kisumu was largely over the northern end of Lake Victoria. From the air we looked down on Jinja where the waters flowing from Victoria Nyanza tumble with a roar over Ripon Falls, forming the Victoria Nile which winds northward to Lake Albert, the source of the Nile.

We stopped at Kisumu for luncheon. Apparently, everything one plants at Kisumu grows. There were flowers of the most gorgeous hues all around the hotel, and even in some of the native compounds there were flowering plants.

A formidable-looking native, togged up as if for a play, stood guard at the screened door of the little hotel at Kisumu. He was long-legged and exceedingly tall, at least six-foot-six, and even so was wearing a high fez. He was in khaki uniform and his long, thin legs were wound with black puttees. I could not but wonder if he was one of the tall Dinkas, who pay for their wives in iron, or one of the Shilluks, who, like storks, stand first on one leg and then on the other as they spear fish from the mud-banks of the Nile.

All of the natives that we have seen today along the Nile are naked; but the native women that one sees

about the airports wear black. One would suppose they would affect rakishly gay colors, but apparently black has seized their imagination.

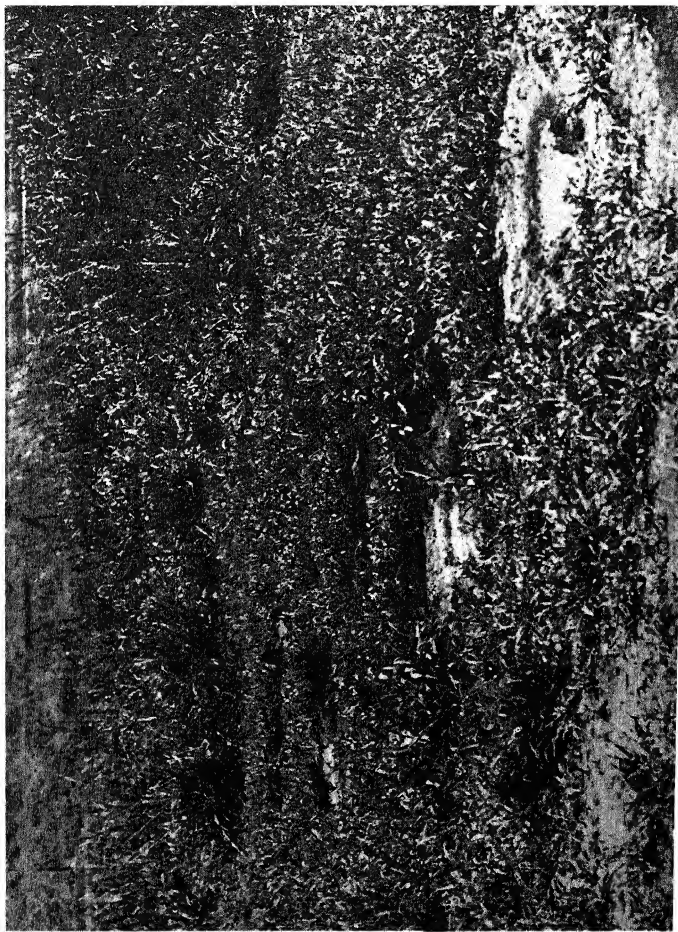
After leaving Kisumu we flew over country that became more and more mountainous. We looked down at Lake Nakuru and Lake Naivasha from a height of 12,000 feet. Beautiful forests covered the mountains. One great crater, eons ago, had been heaped with lava. Gradually this had become soil, and now the crater's sides are lined with primeval jungle.

As we entered the Great Rift Valley, on either side we could see the sheer escarpments and the high mountains beyond. The sky was filled with fleecy clouds. The shadows were bewitching. Suddenly we caught sight of the jagged peak of Mount Kenya and, before we knew it, were slipping down—down—from dizzy heights to Nairobi below. Here it was cool, in fact, breezy. I had to hold on to my hat.

At the hotel, four o'clock tea was waiting, and then the Chief and I went out to purchase our pith helmets.

Nairobi has the appearance of some of our western cities. It has broad streets, some good buildings, picturesque native quarters, and pretty suburban residences. In the environs are coffee, tea, and sisal plantations.

Watching the passing show is always amusing in



ELEPHANT
SPOOR on the
Shore of Lake
Manyara
PHOTOGRAPH BY
ARTHUR B. FULLER

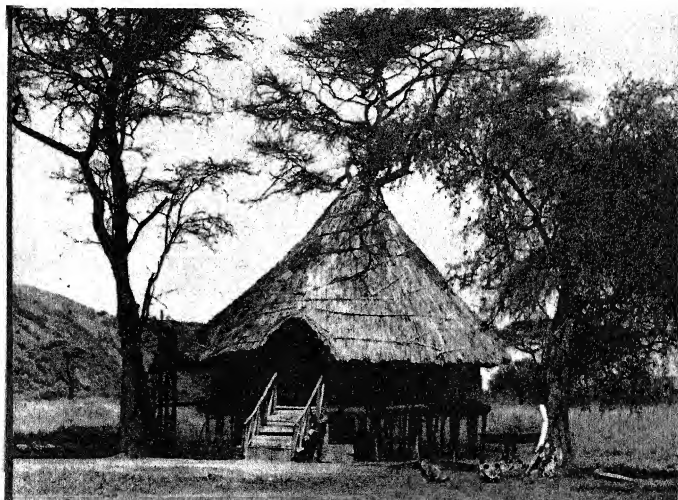


MAJI MOTO CAMP

PHOTOGRAPH BY W. HARRISON CARR

THE LABORATORY at *Maji Moto Camp*

PHOTOGRAPH BY ARTHUR B. FULLER



Nairobi. One sees donkey carts, ox carts, and heavy loads pushed and pulled by naked natives. One sees automobiles and jinrikishas; safari porters wrapped in blankets; personal boys in European dress; natives toggled in every kind of "cast-off"; long, white-robed Arabians and veiled East Indians with streaming hair.

We asked the passengers on our airplane to dine with us this evening. There was an engineer who is interested in copper mining; a sea Captain who is going down to man a ship at Durban; Dr. W. Harrison Carr, a physician, from Harrogate, who, though on his way to Cape Town, is going to join our party for a few weeks; and a most interesting woman from Berlin who, though transplanted to South Africa, is still a loyal German. She sees "no way out for our present civilization, save Might." "Might is power." When Dr. Carr tried to argue England's "moral" attitude toward this present Ethiopian-Italian situation, she answered, "Italy must live. My sympathy is with Italy. It is exactly what England has done. England was strong, and she took other peoples. It is the way with animals. I think it is the only way." It looked for a while as if we might have a pretty stiff argument.

We have just been reading, *Our Lords and Masters*, by an "Unofficial Observer." It brings out the fact that Germany is really looking toward forming an-

other *Mittel Europa*. "Oh, yes," she knew all about that. "That would be good for the German people. The Germans, you know, are a very clever race." She feels that Hitler and the Brown Shirts saved Germany from Communism; that he is sincere and that the German people believe in him; that he would even give up his dictatorship and aid the people in establishing a monarchy if he felt that that was what the German people wanted. So she looks upon the present form of government in Germany as but an evolution toward something better. "Germany is arming very much, but she must do so, because all countries about her are arming very much." And her reason for it was: "That is why war must ever be—it is just like the animals. They kill each other. It is all the same."

NAIROBI TO ARUSHA

NOVEMBER 30, 1935

OUR PLANE was expected to leave Nairobi at nine, but, owing to rains (this is the end of the short rains), visibility was poor and we did not leave until nine-thirty.

As we rose over the Athi Plains, Kenya's beautiful peak, always capped with snow, was lost in a band of mist, but the feathery bamboos and great forest that sweeps down its slopes looked dank and green.

Unlike other flying-fields, the field at Nairobi is surrounded by a ditch and a fence, and little wonder, for the wealth of game about Nairobi is extraordinary. Game was everywhere, as far as the eye could see.

The bluish hides of the brindled gnus, or wildebeests, looked white in the sparkling morning light. Ostriches minced along in twos and threes until, with wings flapping and tail plumes erect, they sped from the shadow of our plane. Kongoni—big antelopes with bent horns—ever on the alert, cocked their heads quizzically as we roared by, and herds of silvery zebra kicked up their heels and scampered to safety. Game trails, looking like narrow ribbons, radiated in every direction, and as our eyes swept the rolling veldt, we could distinguish herds of Grant's gazelle, bearing beautiful lyre-shaped horns, and groups of Tommies (Thomson's gazelle), their whisking tails shining in the sunlight. Within a few hundred feet we saw a slinking hyena returning from his morning feast, and three big rhinos and a mtoto (baby) grazing unconcernedly as we sped by. Further on, a group of giraffes moved over the plains in that strange, rocking

motion that only a slow-motion picture can portray. Everyone was bobbing from one side to the other, so as to miss nothing, but I still had the feeling that if I moved, I might tip the plane.

Mr. K. V. Painter, the Chief and I having struggled through this Great Rift Valley on a safari with native porters, in 1927, and having even climbed the eastern escarpment to the high plateau, it was enchanting to see from the air the familiar ranges and mountains as they blazed into view. It was easy to identify the two escarpments, but from the air it was difficult to believe that each is over two thousand feet high, and that this titanic rift extending from Arabia, where it formed the Dead Sea and the Red Sea, continues down through Africa in two great zones, the Eastern and the Western Rift—enormous faults or cracks, in reality troughs, over thirty miles wide and thousands of feet deep, filled with the largest group of volcanoes known.

These hundreds of volcanoes range from small barren cones to Kilimanjaro, the tallest volcano in the world, to Ngorongoro, the widest crater in the world, and to Oldonyo-lengai, the Silver or Sacred Mountain, to which there can be no equal in beauty in the world.

Surrounding this great Rift are waterless tracts, yet within its craters are bottomless lakes. For ages, the cinders and the ash of these volcanoes have been blown over Kenya and Tanganyika and have provided, as in no other part of the world, an unsurpassed powdered soil.

As we neared Moshi, Kilimanjaro with its eternal snows arose on one side, then the green slopes of Meru came into view, but their tops were still wreathed in clouds as we taxied along the big airfield.

After a mid-morning cup of tea and bananas with our "Empire" friends in the little tent at Moshi, Dr. Carr, the Chief and I left by motor for Safari House, where we not only had a delicious luncheon, undoubtedly planned for the Americans, as it consisted of chops, corn on the cob, strawberries and cake, but learned that Dr. Quiring and Mr. Fuller, the other members of our party, were in camp, having arrived yesterday. It had taken them thirty-one days, by boat, from New York to Mombasa, by way of the Red Sea, while we had made the entire distance from New York to Moshi in thirteen days.

In the afternoon we called upon our old friends, Mr. and Mrs. Ray Ulyate, who were with us on safari in 1927, and who are at present managing the New

Arusha Hotel, advertised as being built "on the spot half way between the Cape and Cairo." In spite of the fact that they were preparing for a dinner of eighty that night, given by the Caledonian Society, they graciously planned that we spend the night with them.

Our room looked out on Mrs. Ulyate's garden—a mass of luxuriant bloom. Everything dripped with moisture, and a babbling stream flowed past our window.

We had dinner in a corner of the hall, overlooking the dining-room, and before dinner was served, we had visits with many of our old friends. The call of the bagpipes, however, arrested everyone's attention. Eighty men immediately fell in line, each marching to his place. Then solemn, white-robed attendants, holding the "haggis" high overhead, fell in behind the bagpipes and marched round and round the room.

All was orderly in spite of the fact that they were allotted a pint of Scotch each, until the King's Toast, after which pandemonium and every kind of Scotch song and Highland Dance broke loose. Long before the "top of the night" the Chief and I went to our room, dozing off finally to the strange calls of wild birds as well as of civilized man.

ARUSHA TO MAJI MOTO CAMP

DECEMBER 1, 1935

AT nine Sunday morning, with Dr. Carr, we started for Journey's End. To the Chief and to me it was the joy of recognition; to Dr. Carr, the thrill of a new adventure. When in our former safari we had bumped over bone-splitting roads, now we motored along roads as good as those at home and carrying sign boards "To Cape Town."

Soon, however, we ran into dust. It had not rained here the night before, and it was like motoring through ash. Our hair felt gritty; our eyes, as if filled with sand; our clothes were coated with gray.

The natives on the outskirts of the town were dressed in cast-off clothes of the white man, and many in gay calico squares. One small boy wore a coat of painted tin, just like that of a sandwich man, and as we motored along farther, we began to see the Masai. They, at least, will not be regulated by the white man. The women still wear cattle hides looped over their shoulders, telephone-wire jewelry, and shave their

heads; while the men still go naked save for a loin cloth, wear their long hair plaited in strange ways with red mud and wool, and carry long, double-edged spears, a panga, or large knife, and frequently a bow and poisoned arrows as well. Their bodies are beautiful, their skin smooth. One wonders if they, like some of the natives of whom we heard recently, steal lubricating oil to rub into their skin.

As we neared the little villages, we met natives wearing large ornaments—pieces of wood and discs of tin—in their ears and carrying burdens on their heads, and we saw many native women near the streams, filling their shining calabashes.

The villages consist of but a few mud huts, square, round, or cone-shaped, windowless, chimneyless, and roofed with thatch, a few patches of banana trees, a few plots of “mealie,” chickens, and a store manned by an East Indian.

When we turned off the main road, we found ourselves in low bush country. A family of giraffes topped off the first mimosa tree; then groups of wildebeest and herds of impala, the most graceful of all antelopes, fitted into the picture, and ostriches, zebras, even Lichtenstein’s hartebeests, were seen on both sides of the road.

Soon we ran into country in which there had been

heavy rain, making of the rich, black, cotton soil a slough of oil-like mud. We skidded all the time, constantly hanging on the beetling edge of the ditch; but in black cotton soil one has to keep going or wait until it dries, and that sometimes takes a week.

As we crossed the Rift Valley, jungle land met us on either side, and Syke's monkeys, gray monkeys, and baboons chattered and bickered and screamed about us while the road became more and more of a marsh and in places a stream. Once we were caught in the midst of it with water way over the wheels. The native boys got out and pushed. Dr. Carr climbed out over the hood and leaped to the bank while the Chief took the wheel, shouting "Goovay," and the native boys "Whoopay" in rhythm, until finally we made the slight incline. A little farther on, however, we almost met our Waterloo. The land was a marsh. Native boys had been sent down from the camp to warn us as to the best way through. We started, but no! We backed and tried another route. No! There was no way but to push. More native boys were in the distance, so we shouted to them for man power, but they did not yield quite enough. There were three more farther on. We shouted to them. In all now, we were about twenty. The foreman of the group wore a pair of sandals made from a rubber tire, a pair of torn, flapping, riding

trousers, a woolly skating cap, and pieces of what had once been a black sack coat.

The "get-ready-push" variety of rhythmical singing was again organized, and slowly we splashed out of the mud, wiped the windshield with our handkerchiefs, and there before us lay Lake Manyara, a shimmering soda lake.

Along the glistening beach paraded in stately mien many different species of birds including gray-winged francolins, marsh sandpipers, Hottentot teale, solemn-looking marabou storks, and gluttonous vultures. We motored over a sandy area dotted with scattered bush, one side leading to the lake, the other to thicker and thicker bush, which finally blended into the great forest of the escarpment. Rhino spoor, buffalo spoor, even elephant spoor were right on the sands, while far distant, at the end of the lake, was a mirage, so obliterating the boundary line of the lake that the distant mountains resembled islands mirrored in its surface. "This truly is game country—animal's, not man's paradise," said the Chief, when suddenly a turn in the trail brought us to Maji Moto Camp snuggled right into the midst of the jungle.

Maji Moto Camp, about one hundred miles west of Arusha, hugs the base of the high west escarpment of the Eastern Rift Valley. Above, following it to the

clouds, the escarpment rises, sheer, green and thick with forest. A small clearing surrounded with jungle is our camp. From it we can hear the roar of the waterfall as it tumbles down the escarpment. That and the strange calls of birds are all that break the stillness.

The Camp, which was established under the supervision of Safari (Africa) Ltd., consists of fourteen native huts built of mud, reed, and bamboo, and thatched with straw, encircling a large ring where the fire burns at night and two boys stand guard. We are $3\frac{1}{2}$ degrees south of the equator. The altitude is about 4,000 feet. Here, night falls like a curtain. At five minutes of six, it is light. At five minutes past six, it is night. By this drawing of the curtain we set our clocks.

Maji ya moto means *hot water*. The name of our camp is shortened to Maji Moto, but is so named because some few miles away there are hot springs in which natives and animals bathe.

Our little huts vary in shape. Some are round, some oblong, some square, some octagonal, some even have sixteen sides; but all have high pointed roofs and a circular screened opening.

We enter our hut by six steep steps. The hut itself is built back about five feet on a high mud platform, and as the thatched eaves extend far beyond the walls

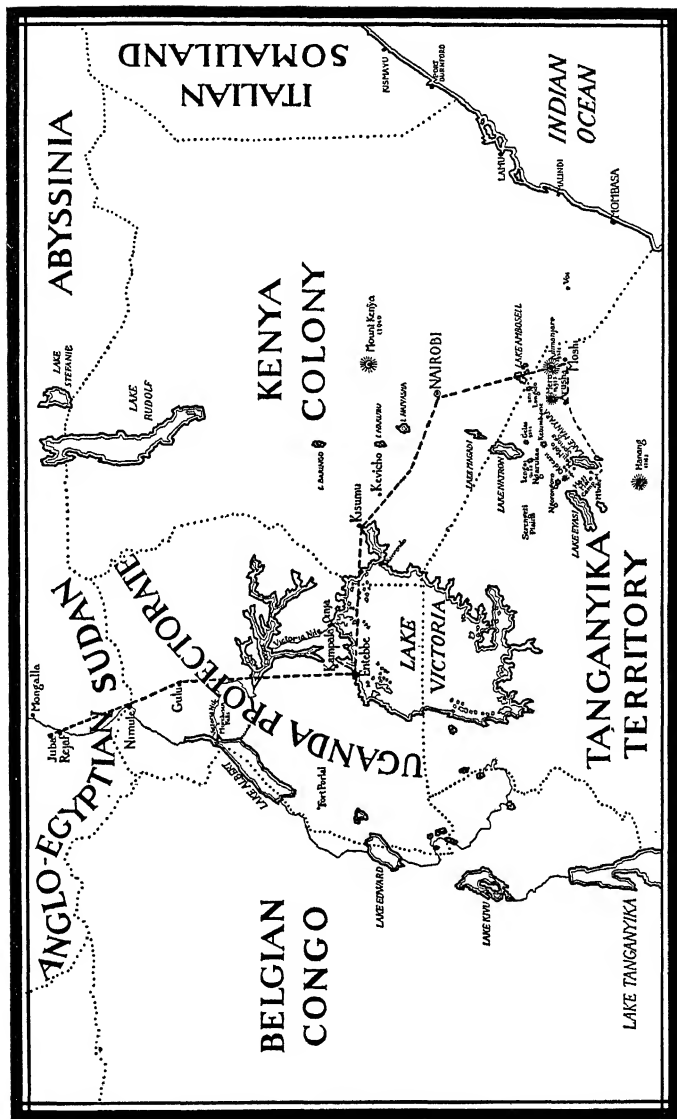
and hang low, this platform serves as a circular porch on which one can manoeuver against the sun.

Inside, a living tree occupies the center of the hut. This is encircled to the height of perhaps ten feet with split bamboo boards in which are many nails—literally a clothes' tree! The floor of the hut is of pounded mud, made from the pulverized soil from the inside of the large ant-hills, and hard as concrete. This is covered with matting rugs on which there are woven pictures of charging elephants and lions and buffaloes.

On either side of the hut are beds built of bamboo, but with mattresses and plenty of cover, and the window which extends all around is not only well screened with netting but also with heavy wire, to keep out marauding beasts. There is an open cupboard of shelves for one's small things, two open cupboards of shelves for one's shoes, two wash stands, a built-in desk, a tiny shelf with a mirror above, and two chairs.

Everyone, except the Chief and me, has a hut to himself, and there is also a dining hut, a cooking hut, native huts, etc. No matter how hot the sun is, these high huts, thatched with reeds, are always breezy and comfortable.

The other occupants of our hut are large wasps; beautiful little bright red, velvety things that look



like small spiders but are called "mites"; beetles and spiders of all sorts and sometimes of surprising size; moths; millipedes; small lizards; orange-headed chameleons with sticky tongues; occasional scorpions; and even the praying mantis; while underneath in the cool shadow of our hut in the heat of the day lies Hamish, the little wildebeest.

Our laboratory is next door. In type it is like our huts, but larger. A wide shelf or work bench runs all around it, as well as around the central tree. At one side is a large dissecting table, over which is swung a gasoline lamp. At the other side is running water, so arranged by means of a barrel outside, which serves as a reservoir. A little green tent to the other side of us and an open, bamboo, straw-thatched storage hut hold our research supplies.

As I sit here writing, nothing but the hum of insects, bird notes, and the rhythmical chanting that always accompanies the physical labor of native boys can be heard.

Other Inhabitants of the Camp

The first thing that greeted our eyes was Hamish, a small wildebeest, with a rope trailing from his neck. Hamish is an orphan and was brought in when a

mtoto. At night he hugs the fire with the native boys; during the day he wanders a bit, rope trailing, to graze. He and the dogs are great pals. If Hamish proves a bit of a Prodigal Son, one of the dogs goes out to fetch him, his method being to catch hold of the rope, which makes the wildebeest run to escape, but they both always run home. If the dog lies down, the wildebeest will rub him all over with his nose, sometimes even bowling him over, while the dog relaxes and thoroughly enjoys it. When the romp is over, they lie down together, dozing in utter contentment.

We have a herd of goats in camp but one never knows just where to find them. If there is anything high, a barrel, a motor car, a truck, near enough to the top of a hut, there they are sure to be.

Five civet-cats in an enclosure make that whereabouts offensive. I would at any time rather take all that a skunk has to give than the offering of the civet-cat. A ferocious looking and sounding porcupine occupies another enclosure with three turtles whose carapaces he is gradually eating. Someone told me the other day that he had seen five lions held at bay by a porcupine. The lions were interested, but none dared attack. Finally, the porcupine won the day, the lions retreating, and no wonder, for with the close clustered group of short quills at the end of the tail, a porcu-

pine makes a noise louder than that of a rattlesnake and at the same time all of the quills on his back rise threateningly and he snorts, stamps his feet, and rattles those quills too. He is dexterous in far more ways than one!

The Native Boys

Jaruga is our native boy. A half hour before we are called, a gentle voice at our door says, "Hodi" (Here I am), and it is Jaruga bearing a pretty yellow teapot and cups and saucers on a wooden tray. He raises our nets and takes out our boots, brings fresh water for our basins, a cup of hot water for shaving, and a bottle of cool drinking water. While we are at breakfast, he sprinkles our mud floor, scrubs our matting rugs, puts our tents in order, dispenses "Flit" generously, and washes and irons all of our soiled linen. All we need to do at any time of the day, should we need anything, is to call "Jaruga," and flying across the compound he comes, saying "Hodi." If I want him to enter, I say "Karibu."

At seven-thirty our baths are placed—great soft canvas tubs—one on either side of our giant clothes-tree. A table is put between them and on it are arranged our toilet articles. The tubs are filled about one-eighth full, but when we sit in them, they overflow



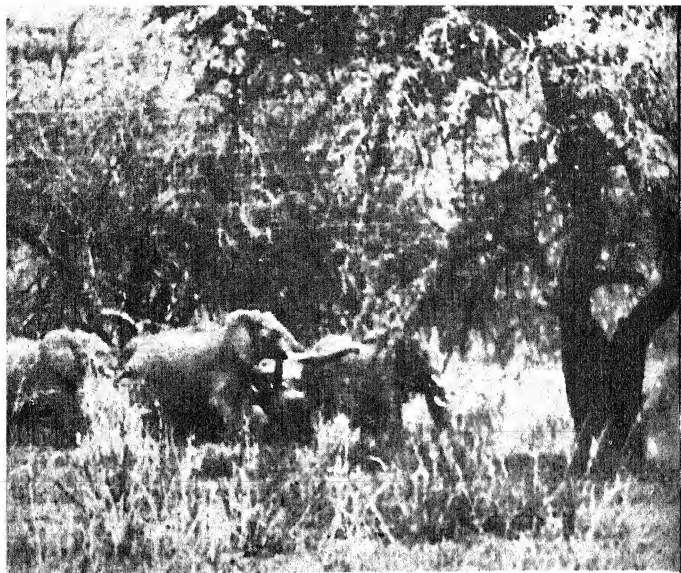
HAMISH, Our Pet Wildebeest, and the Dogs

PHOTOGRAPH BY ARTHUR B. FULLER

*HEAD OF THOMSON'S GAZELLE Showing High Development
of the Sense Organs*

PHOTOGRAPH BY ARTHUR B. FULLER





IS OF ELEPHANT Often Crossed the Trail Leading to Maji Moto Camp
 PHOTOGRAPH BY ARTHUR B. FULLER

BUFFALOES Near Maji Moto Camp
 PHOTOGRAPH BY ARTHUR B. FULLER



in waterfalls, over the matting rugs, over the floor, in small rivulets to the outer edge of the hut where they sink into the mud floor and are lost.

After dinner our tent is put to rights for the night; our beds are opened, our night clothes put out, and a lighted lantern left on our little porch. As Jaruga leaves, I reply to his "Tayari" (It is ready), "Santa," which is "thank you."

Whenever the native boys work, they sing. If there are several of them working together, they sing in rhythm, each keeping his own pitch. If one is working alone, he sings loud and in many pitches as if to keep himself company. Captain Hewlett says they make up their songs about anything that is going on, commenting upon and gossiping about anything and anybody.

The Table

Our fare is splendid. At breakfast we have a choice of cereal, eggs, bacon, fried tomatoes, or kippered herrings. For lunch, delicious meat soups, rice dishes, and stewed fruit are served. Tea is at five, and then even frosted cake puts in an appearance.

The dinner hour in Africa is always uncertain. Native boys quit work early in the afternoon and go to their huts. Daylight in Africa is precious; at six,

night is just around the corner. No one would think of beginning to prepare dinner until after dark. In Africa, one visits, then dines; so it may be eight-thirty before we meet for peanuts and a "sundowner" or soft drinks. For dinner, we are served soup, game, which often has a place in our records, and some kind of a jelly or pudding. All of this is prepared in a native hut, windowless and chimneyless, by a native boy, on a small fire built on the ground, and with equipment which has been fashioned largely out of petrol tins.

Our Back Yard

The great deposit of volcanic ash, the tropical sun, the abundant rainfall, the elevation varying from 3,000 to 9,000 feet, impenetrable swamps, and Manyara—a great soda lake—give a variety and abundance of plant, tree and animal life, that makes this spot ideal for our purposes.

Everything is in our back yard. Lake Manyara, teeming with bird life, is but a mile away. The great Crater of Ngorongoro is but sixty miles away. To the right of us is dense bush, the haunt of the rhino and buffalo; to the left are swamps of coarse grass, the home of the hippo; to the back of us, the great forests of the escarpment where elephants roam; and in front

of us, the plain where herds of zebra, impala, and wildebeest graze.

In the shadows of the great forest are baboons, Syke's monkeys, gray monkeys, hyraxes, and big-eyed lemurs, while in their depths lurk pythons and giant lizards.

Feeding on this wild life are many carnivora—lions, leopards, chitas, hyenas, hunting-dogs—and circling over us, about us, are always hundreds of varieties of birds and insects.

Our Group

We are a group of eight: Dr. Daniel P. Quiring, Ph.D., of the Research Laboratories of the Cleveland Clinic Foundation and the Department of Biology of Western Reserve University; Mr. Arthur B. Fuller, Chief Preparator of the Cleveland Museum of Natural History; Dr. W. Harrison Carr; Captain J. Raymond Hewlett; Mr. Bryan Cooper; a representative of Safari (Africa) Ltd.; and the Chief and myself.

The Chief, Dr. Quiring, and Dr. Carr make the dissections; Mr. Fuller prepares the skins and skeletons, makes the casts, and takes the photographs. I weigh the organs and keep the records.

Captain Hewlett is our professional hunter. During the war he served with distinction in the Royal

Air Force. He is one of the blue-eyed, lovable Englishmen that one finds all over the world, and was one of the white hunters who served in the Prince of Wales' Hunting Expedition in Africa.

Dr. Carr is the young English physician who has been with us throughout our flight to Tanganyika. He came out here expecting to hunt, but he has become so intrigued with our research problem that he has decided to join our expedition for several weeks and assist in the dissections.

Mr. Bryan Cooper, a biologist, originally came out here to arrange movies of insects and is assisting in our bird collection. He is a young chap, well informed, and talks and argues about everything.

In addition, there are perhaps thirty native boys, including houseboys, cooks, drivers, gunboys, skinners, and trappers.

Our Objective

The purpose of this investigation, as I understand it, is to see in what way the human mechanism, which has serious disorders and diseases which have been difficult to prevent and to control, varies from that of animals in the wild state which do not have the same diseases.

If we could find out in what way the relationships of the sizes and developments of the energy-controlling organs differ in animals in the wild state from the size and development of these same energy-controlling organs in the human being, some useful information bearing upon the diseases peculiar to man might be found.

When Little Red Riding-hood observed to the Big Wolf, "What big ears you have!" she was far more of a biologist than she has been given credit for, as it is the big mobile ear, the prominent eye, and the wide-spreading nostril that are the starting mechanisms of animals. Like sentinels, these organs stand ever ready, in obedience to the special senses they represent, to pull the trigger or set the gear, making possible a quick getaway or a vicious attack.

In man and animals, the constant energy level of the nervous system is effected by the thyroid gland. The thyroid gland serves like the governor of an engine. The emergency energy of the nervous system is effected by the action of the nervous system upon the adrenal glands and sympathetic complex. The adrenal-sympathetic complex serves like the accelerator of an engine.

The civilized state implies constancy of activity. The wild state implies outbursts of activity. The

weight of the brain in relation to the weight of the body is far greater in human beings than in the lower animals because the characteristic of man is constancy of activity. Man "works all day and worries all night." Therefore, in man the weight of the thyroid gland, which is the organ that sets the constant level of activity, is about twice the weight of the adrenal gland. Since the characteristic of animals in the wild state is an outburst of activity followed by inactivity, the situation is exactly reversed, and the weight of the adrenal gland, the organ through which crisis energy is effected, exceeds the weight of the thyroid gland.

But civilized man, even when physically safe, is constantly under strain, while wild animals, when the emergency is over, lapse into negativity and so remain until a new threat appears on their horizon. Thus in the wild state the mechanism is not being worn out. In the civilized state the mechanism is constantly being worn out.

Therefore, in order to find out whether there is a natural cause for these energy diseases that affect only civilized man and to see whether these peculiar energy diseases are due to the size and activity of these energy-controlling organs which seem to be so highly developed in man, it is necessary to examine the brain, the thyroid gland, the adrenal glands, and the sympa-

thetic complex of as many species as possible in order to see whether the relationship of the energy organs in man is like that of any other animal.

So we are collecting animals of as many species as possible. If they weigh over 600 pounds, we dissect and study them in the field; otherwise, we bring them to the laboratory where the entire animal is first weighed, then skinned, dissected, and studied. We weigh the skin, the eyes, the brain, the pituitary gland, the thyroid gland, the adrenal glands, the adrenal-sympathetic complex, the heart, the lungs, the liver, the kidneys, the genitalia, the stomach, the intestines, and the larynx or a section of the trachea.

Each organ that is preserved is wrapped separately, marked and placed in a jar holding formalin solution. Our jars range in size from one-half pint capacity, one pint, one quart, two quarts, one gallon, to five gallons. Each jar then has to be marked with its contents and packed for shipment. The plan is that upon our return wax models will be made of all important organs. So I find myself today in the laboratory in charge of four sets of scales, of innumerable glass jars, countless labels, notebooks, pencils, ink, gauze, formalin preservative, operating gloves and aprons, with specimens before me, waiting to be weighed.

Being eager for a first look-in, Dr. Quiring and Mr.

Fuller, with Captain Hewlett, started out on their first morning to scout for game. They had hardly left the camp before they ran into a herd of elephant, and but a few steps further on, while Dr. Quiring was taking a picture, a herd of buffalo rushed past. They secured an impala, and when we arrived Sunday noon, Dr. Quiring was busy with its measurements.

Monday morning they again went scouting, Dr. Quiring to shoot and Mr. Fuller to take photographs. Again they ran into elephants. Mr. Fuller climbed an ant-hill to get a better view, but the elephants caught his wind and slowly retreated into the shadows of the forest. Their retreat disturbed two rhinos and a mtoto that rushed out, so just as Mr. Fuller climbed down he found the elephants departing but the rhinos coming—and he had only a camera with which to shoot!

Tuesday morning, they brought back another impala, a gray monkey, a big eagle, and a strange-looking mudfish—a barbel—at least three feet long. Late in the afternoon, Dr. Quiring, Captain Hewlett and I went out to scout for game, hoping to get a zebra for a possible bait. We rode down to the shore of Lake Manyara, where there were hundreds of birds feeding—storks, herons, egrets, vultures, and small birds of every kind. The sand was crisp with the soda deposit and crackled as we walked on it. As we turned in that

night, through the trees we could see the moon, Orion was overhead, the Southern Cross twinkled low in the horizon; strange barks and calls broke the silence; old Leo roared, and later a hyena took up his song. The nights are cool, the matted beds comfortable, the little hut a delight to snuggle into, and as we slipped into slumber, we hoped that the fire outside was sufficient to keep out inquisitive prowlers.

MAJI MOTO CAMP

DECEMBER 4, 1935

The Rhino

THE arrangement last night was that Captain Hewlett, Mr. Fuller, and Dr. Quiring should go out for rhino at four this morning. Captain Hewlett had scouted about the day before and knew the whereabouts of a good specimen. When secured, the native boys were to come back for the Chief and me and we were to bring out all the paraphernalia for dissection in the field.

At seven we heard the first shot; then in fifteen minutes two more shots; then a fourth.

Just as we finished breakfast, Dr. Quiring and a few native boys returned, saying the rhino was down in a clear space and but half a mile away.

We gathered together our equipment and were off with bowl and plaster, rope and scales, a kit of instruments, hammers, axes, tarpaulin, etc., on the heads of the boys. With our gun carriers leading and rifles loaded, the Chief, Dr. Quiring, Dr. Carr, and I, with the native boys, silently tiptoed our way, penetrating deeper and deeper into thick bush, the native boys stopping like antelopes at every sound, and looking about before venturing further, as this is elephant and buffalo country and spoor was all about.

Soon we ran onto the blood spoor, and in a moment, there in a little open space, lay our rhino, in perfect position for our purpose. Round and round him we walked, impressed with the grotesqueness of the great beast. We wondered what was his age, his story, what were his links with the past. He was so immense, so ugly, it hardly seemed possible such a mass of dynamic energy could be almost instantly stopped by a few small pieces of steel from Mr. Fuller's rifle. He was a young adult bull, measuring 10 feet 11½ inches, including the two-foot tail. In the deep folds of

his skin were massed many ticks; in fact, he carried with him a valuable private collection of insects, ticks, and worms that scuttled for safety as soon as he was killed.

In no time poles were cut, a tarpaulin was stretched over him and our scales were slung over the branch of a tree close by. The native boys cut a three-foot window in the big carcass. That piece of skin weighed 35½ pounds. The skin varied from about a half inch in thickness, under the belly, to over an inch in thickness on the sides and the back, the thickest part being over the neck and the shoulders.

The Chief, Dr. Quiring, and Dr. Carr made the dissection. There seemed to be just five centers of heavy muscles—the four legs and the great head. The men said the cartilage of the back bone was “soft,” but I noticed they cut it with a hatchet!

The rhino birds must have had good picking on this old fellow's back. These little brown birds serve as eyes and ears for the rhino. Not until they leave does the rhino sense or scent danger. Then in alarm, his nose to the ground, he puffs and circles until he picks up the scent when, without further ado, he charges.

The rhino bird and the rhino are fine examples of coöperation. The ticks on the rhino give a good living

to the bird, and the eyes of the bird are more useful to the rhino than are his own eyes. The rhino, in fact, has eyes all over him—eyes that see in every direction—and if one pair of these collaborating eyes is destroyed, a new pair flies to him. The rhino cannot coerce the rhino bird into his service, but the rhino affords not only a living but also a haven for these birds, as many of the enemies of the rhino bird would not venture to attack them on the rhino.

Although birds also accompany the elephant and the buffalo, neither the elephant nor the buffalo depends, as does the rhino, upon birds to apprehend danger for him. But neither the elephant nor the buffalo offers such an easy living as does the rhino. The eyesight of the rhino is said to be poor. Perhaps the fact that he exercises his own sight so little accounts for its poor development. One eye of our rhino, for instance, weighed two grams less than one eye of a Thomson's gazelle; yet the weight of the rhino was 1,663 pounds and that of the gazelle 52 pounds.

At eleven-thirty we were called to luncheon, served under a mimosa tree from an English picnic basket, while Captain Hewlett told us of encounters with rhinos.

He says that the rhino is largely a creature of habit. He grazes early in the morning, retreats into the bush

for his noon siesta, and comes out again at tea time. One can almost tell the time of day by the time he comes out to graze. Each morning when we leave camp we run into rhinos and mtotos. A well regulated rhino family picks out its habitat and stays there, unless disturbed. Next to the elephant there is no animal with so keen a sense of smell as the rhino. Several times Captain Hewlett has pointed out to us great circles in the sand where a rhino has milled about, perhaps trying to rub some of the ticks from his back.

While we were working on the rhino, the native boys built a high machan in a tree close by. Captain Hewlett and Dr. Quiring plan to stay there tonight in the hope of getting a lion or a hyena.

MAJI MOTO CAMP

DECEMBER 5, 1935

In the Machan

ALL night, from six o'clock in the evening to seven this morning, Dr. Quiring and Captain Hewlett sat in the machan, high in a great mimosa tree, snug-

gled together without room enough to move, not able to smoke, not daring to speak, sneeze, or cough, lest they be sensed by some prowling animal. High in the branches of near-by trees sat two boys. The arrangement with the camp was that one shot from a rifle followed by two quick shots would mean "lion"; then after an interval, two shots from a shotgun would mean "Come and fetch him."

We all slept that night with one eye open, for if they killed a lion, it was to be brought back, no matter what time it was, and we would get up and make the dissection and the measurements.

By eleven, elephants were squealing; by twelve it began to rain; by four, to the other side of us, lions were grunting, but not a shot did we hear.

By eight, the men were in, rain having spoiled everything, and with only a vulture in the bag. However, the porcupine sat on one of the tortoises last night and literally ate the carapace off him, and the civet-cats were getting a bit spitty; so we decided to take them, and had a busy morning after all. In the afternoon, things began to move, and before the day was over, an impala, a European stork, a hawk, two beautiful pink lesser flamingoes, an Egyptian goose, a spur-wing plover, a vulture and an eagle had been added to our bag.

Mr. Fuller has just finished preparing the flamingoes for mounting, and they are most beautiful. A flamingo seems to be half goose and half stork. The feet are webbed, but the long, slender, red legs remind one of those of the stork. The bill is longer than the head. The tongue is covered with small curved spines, and strange, sieve-like plates on either side of its curved bill allow the flamingo to gulp in a bill-full of brackish water filled with algae and crustaceans, then strain out all that it does not desire. With wings folded, the plumage of the flamingo is a delicate shell pink, but when the wings are spread, the deep coral, even red markings, and the splashes of black make a vivid contrast.

MAJI MOTO CAMP

DECEMBER 6 AND 7, 1935

I THOROUGHLY dislike the hyena. I enjoy his weird call, and as one sees him in the early morning light, skulking low to the ground, entrails hanging from his mouth, there is a sinister beauty about

him because he is so perfectly adapted to being an evil thing. But today, stretched under the tree, ready for dissection, he is offensive. His tawny, bristly hair and the whites of his eyes give me the creeps. No wonder the natives will not touch him, for he is the living mausoleum of their dead.

Zebra, baboon, steinbok, lemur, dik-dik, reedbuck, wildebeest, Thomson's gazelle, snakes, scorpions, and gray monkeys—all have been put through our hopper during the last three days.

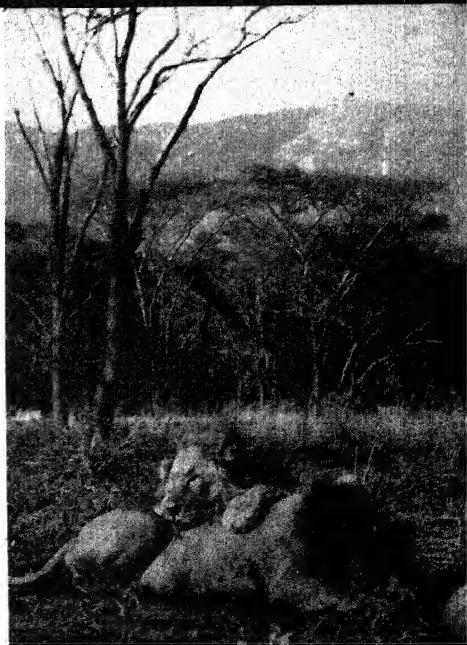
The dik-dik is no larger than a jack-rabbit. It is the smallest of all the grass antelopes. Little wonder they skip along light-heartedly, as it takes a quick and a sure shot to get a dik-dik.

Our steinbok weighed 17 pounds. It stood 22 inches at the shoulder and had short horns—a pretty, reddish-brown antelope, expert in the art of concealment.

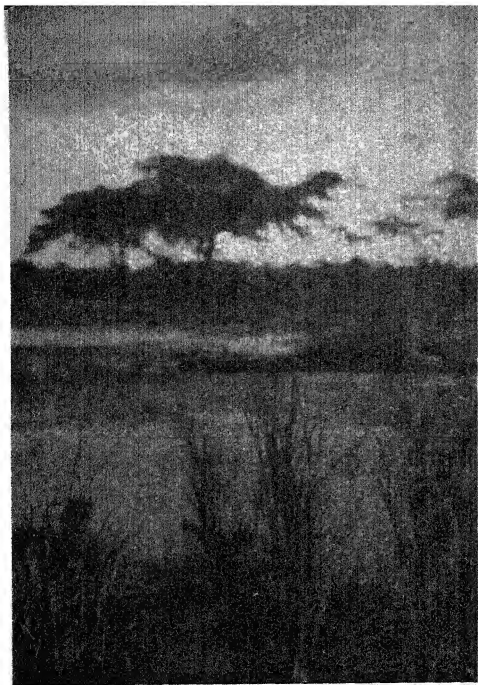
It has been a surprise to us to find that an animal with a deformity could even grow to maturity in the wild. A wildebeest and a zebra, for instance, each had an undeveloped kidney, and a lemur had only one kidney and one thyroid gland, yet seemed to be perfectly healthy.



A HYENA



LIONS Weighing
410 and 430
Pounds



OUR GIRAFFE
*"There Was
Something About
This Great Beast
That Seemed to Cast
a Spell Over All
of Us."*

*Every Day We
Encountered
RHINOS on the Plain*

PHOTOGRAPH BY
DR. W. HARRISON CARR



MAJI MOTO CAMP

DECEMBER 8, 1935

The Lions

WE put down two zebra baits late Saturday afternoon, and Dr. Quiring and Captain Hewlett spent the night near by, in a camouflaged position.

All night they waited, but not a lion approached. Bound to get one, at early dawn they started across the plains and soon saw two fine males stalking a herd of zebra. They began to stalk them, and in twenty-five minutes they were back and at our door with the two lions. Captain Hewlett's lion weighed 430 pounds; Dr. Quiring's, 410 pounds. The lengths were 8 feet, 11 inches and 8 feet, 7 inches.

We got up immediately and set to work. The Chief called our attention to the sympathetic complex which, in itself, was as large as the adrenal glands. Eighty or more nerves extended from it to the adrenal glands. The adrenal glands and the sympathetic complex secrete adrenalin and sympathin, the two most

powerful excitants of oxidation known. It is by means of these two fulminating secretions that animals are endowed with their unique power for attack or escape.

With great care the Chief took out the lucky bones, two little floating, rib-like bones, one in front of each shoulder, and then dissected the shoulder muscles and the large nerve trunks behind the shoulder, as the men wanted to see why the "shoulder shot" holds more disabling possibilities than any other shot. From the spinal cord, the three great nerves of the brachial plexus and the large blood vessels extend, fan-like, to the massive shoulder muscles. Therefore, a shoulder shot kills instantly by shock, while a heart shot, though fatal, may allow the animal to rush at top speed for a hundred feet or more.

When skinned, a lion loses all its dignity. Bereft of the mane, the skull seems small in proportion to the body, although, in reality, it measures about 16 inches in length. The stomach of a lion is large. A lion gorges, rests, then gorges again. It neither calculates calories nor is worried by overweight. In the wild state, a lion does not get fat. In fact, very few wild animals possess much fat. Perhaps that is why Ali, our skinner, so treasures a few bits of fat when he finds them.

By noon we were pretty well finished. Mr. Fuller had prepared the skins and all through the afternoon

the native boys were outside our hut, singing as they prepared the skeletons.

We lingered for a while at the table after luncheon, discussing the lion as a killer. The Chief brought out the following points:

First, that a lion kills only when in need of food; it never kills for sport as does a leopard or man.

Second, that when a lion kills, it kills accurately and quickly; with a soft-pawed stalk and a spring it strikes its kill down with one blow. This method of killing the Chief contrasted with man's wounding of game or transporting domestic animals hundreds of miles—frightened, hungry, thirsty, sleepless, so crowded that they are often disabled—only to force them, terrified, into the stockyards and lead them to the execution block.

Late in the afternoon, Captain Hewlett, the Chief, and I went out to scout for elephant or buffalo as one of them must be our next task. We motored up to the Hot Springs which flow right out of the ground in little rivulets to the beautiful high grass which forms a warm marsh in which all animals wallow. Everywhere we saw elephant, buffalo, and rhino spoor and dung.

High up in the white sand, a little trench has been dug and encased with boards—an improvised bathtub

where one can bathe out under the sun in the hot sulphur water which trickles down from the rocks of the escarpment. There is also a high machan in a tree above a great pile of rocks—a splendid observation point from which to watch animals that come to drink in the moonlight.

There is a beautiful, dark-skinned bull giraffe that lives at the edge of the forest near Maji Ya Moto Springs. We have seen it a number of times and want to immortalize it. It is curious about us, but wary, and the forest of the escarpment is an easy retreat.

MAJI MOTO CAMP

DECEMBER 9, 1935

Buffalo

EARLY this morning Captain Hewlett, Mr. Fuller, and Dr. Quiring left to scout for buffalo. They promised to be back with one at eleven-fifteen, but were fifteen minutes behind schedule. They got into a marsh of papyrus where they found themselves up to their knees in mud, the papyrus waving high over

their heads and a herd of some sixty buffalo all about them.

This was an ideal cover and feeding ground for buffalo, but it was impossible to see the great beasts although they could easily be heard. Occasionally snow-white egrets flew up from the reeds, indicating to Captain Hewlett where the herd was, as egrets and herons often follow buffalo through the high grass to catch on the wing the small insects that are disturbed as the buffaloes push a passage through the tangled reeds.

Fortunately, the wind was in the right direction, as the buffalo is a very wary beast. Its sense of smell is said to be almost as keen as that of the elephant and its eyesight and hearing are also excellent.

Cautiously Dr. Quiring, the tallest of the three men, pulled himself into a tree sufficiently high to see where the buffaloes were, then, aiming at what he thought might be a shoulder, he brought down a good specimen. The shot was interesting as it ran right under the base of the brain, not injuring the brain but killing by concussion.

The Chief and Dr. Quiring are doing the dissection now—under the mimosa tree, just outside my hut. The Chief is on his knees, his helmeted head actually inside the ribs. It is as if he had crawled inside a great cave.

MAJI MOTO CAMP

DECEMBER 12, 1935

FOR two mornings Dr. Quiring, Mr. Fuller, and Captain Hewlett have been out for buffalo because the buffalo that Dr. Quiring shot was a pregnant cow, and although the adrenal glands were much larger than the thyroid glands, the ratio of weights was not as is usual, as in pregnancy the thyroid glands are enlarged. Having had permission to collect a certain number of females, we naturally get some that are pregnant. The embryos are interesting, particularly those of the zebra with their stripes and bristly manes.

Captain Hewlett saw a wart-hog cross the trail to-day and he and Mr. Fuller both started around a clump of bush to get it, Captain Hewlett, one way, with a gun, Mr. Fuller, the other way, with a camera. Captain Hewlett heard the animal munching and got down on his hands and knees to crawl to it, when suddenly he looked up and, instead of a wart-hog, it was a rhino and a mtoto. We shot one wart-hog, however,

yesterday, a nubbly-looking thing; but the natives went off rejoicing at the thought of a feast.

By the time we have demobilized our specimens, it would seem as if there was not much of the animal left, but it is astonishing the way the native boys pounce upon the liver and the meat. Meat is hanging on petrol tins, on the eaves of the huts, and on sticks all around the fire. It is blackened by smoke, then dried by the sun.

The other day we had such an orgy of kills that one of the drivers got groggy from too much meat. He was like an old python that had swallowed a pig. He might as well have been drunk, for he could not do anything but sleep off his gorge.

The Chief and I went out early this morning, hoping we would see the small herd of young elephant that Mr. Fuller and Captain Hewlett saw yesterday. Instead, we saw thousands of black and white Holland storks with gay red legs. They migrate to Africa every year. This year they are especially lucky as there are swarms of locusts.

There seem to be two kinds of storks: the black and white, red-legged ones, and pretty, soft, grayish-blue ones with yellow legs. There were so many it was hard not to run over them. We had to shoo them out of our way! Among them, in little groups of two or three,

were to be seen the dignified old adjutant or marabout-storks as if on military parade, looking so groggy, yet so dressy in their swallow-tail attire; but when one comes near, their ugly, raw-looking long necks are repulsive. Hundreds of them are in our camp continually, squawking and quarreling over what we throw out from our kills.

Yesterday, Mr. Fuller brought in two stately crowned cranes—sort of fairy tale birds! To me they have always walked in the gardens of princesses. I have seen one or two in zoos, and I recall one lonely beauty that used to walk up and down in Mr. Wade's garden at Thomasville. I felt just like a sultan or some rich potentate last night when we were served crowned crane for dinner.

I am always asking what we are eating for dinner. There are duck and partridge, spur-fowl and guinea-hen, Tommie and kongoni, reed buck and steinbok; buffalo steak, buffalo tongue, buffalo-tail soup, and even hippo—the flavor of onion always carrying us through the hard places.

The Giraffe

This morning we again saw the lone giraffe and wildebeest that live up near the Hot Springs. We want

both of them, but their senses are too keen. We also saw some beautiful little jackals which from a distance resemble coyotes.

Late this afternoon Captain Hewlett asked Mr. Fuller and me if we did not want to go out and scout for game. We are still on the hunt for a bull buffalo. We had hardly left our own compound when suddenly right on the trail was our beautiful bull giraffe. He had come to see who it was that was disturbing his quiet up at the Hot Springs.

Captain Hewlett said, "We would better take him." It seemed a pity to kill him, he was so beautiful, so big, so harmless, but we plunged after him through long grass, waist high. I felt like a high-stepping horse while trying to walk through it, lifting a foot, then setting it down again, who knows where—in a wart-hog's hole or on an ant hill!

The giraffe, meanwhile, had turned at right angles through the bush. Mr. Fuller and Captain Hewlett were out of sight, and the boys had cut corners to try to head off the giraffe. I suddenly realized that I was alone and in thick bush, which was full of rhino, that I had no gun, was out of breath anyway, and it was the time of day all animals are about. Slowly and cautiously, I found my way back to the trail, where I remained near a big tree until I heard the shot. Then

the native boys came back for me and we walked through grass, head high, to a little open stretch of beautiful white sand surrounded with high bush where the giraffe had fallen.

There was something about this great beast that seemed to cast a spell over all of us. Perhaps it was his dark mass on the white sands, illumined by the setting sun; perhaps it was only his link with the great past, which gave us a phylogenetic recall, but as he lay there in the fast coming night, we were conscious not only of his beauty but of the marvel of Nature's adaptation to its needs as well.

When one looks up at the head of a giraffe, it seems small in comparison with his great slanting body, but as I looked down upon our giraffe, the head was very impressive.

The eyes were large and had exceedingly big pupils. The color of the eyes was a beautiful liquid brown, and they were shielded by heavy lashes. The upper lip was long and flexible. It was covered with short, sharp bristles. No doubt, both the lashes and the bristles are Nature's adaptation to the thorny tree upon which the giraffe feeds. The nostrils, mere slits, can be closed to intruding thorns. The ears seemed small; but it is by sight that the giraffe senses danger.

Rising from the top of his great head were five

horns: a frontal horn which resembled a huge bump right in the middle of the forehead; two good-sized main horns; and, behind these, situated at the back of the skull, a pair of smaller horns. All five of these horns were covered with a soft, hairy, almost fuzzy skin.

The body of the giraffe is not large. It is the long legs and the long neck that give the enormous stature to the giraffe. The sloping back gives one the impression that the forelegs are much longer than the hind-legs, but the four legs are about equal in length. The cumulative result of stretching over a long period of years has developed an enormous elongation in the shoulder blades and it is these built-up shoulders that not only give the body of the giraffe its slant, but also must account for the ungainly rack-like gait by which the giraffe moves.

The Chief had been in Arusha all day, making final arrangements for Dr. Quiring and Mr. Fuller to collect chimpanzees in Uganda, but just as Dr. Quiring and the native boys arrived with skinning knives, scales, and lanterns, we heard the Chief's car and sent boys out to intercept him.

A native basket containing water and lime juice, crackers and cheese, and bananas, was brought to us. A ring of small fires was lighted, and while we worked

by the aid of lanterns and flash-lights, the big, full moon climbed over the forest, illuminating the scene, and near-by hyenas cheered us on.

The height of our giraffe, at the shoulder, was 16 feet, 2 inches. The sharp, thorny tongue was 18 inches long. Since pricking his fingers on it, the Chief no longer wonders how the giraffe can feed near thorns. His sympathy now is with the tree!

Skinning the great beast was most difficult. We all took a hand, with blisters as a result.

When Dr. Quiring pricked the peritoneum of the giraffe to let out the gas, the old fellow deflated like a rubber tire. It sounded like escaping steam.

In order to dissect out the adrenals, Dr. Quiring and the Chief (in his city clothes) crawled right into the carcass, and when Dr. Quiring severed the aorta, a stream of blood spurted like a fountain, flowing down over the great carcass and pooling in the white sand.

We were all curious to know what we would find in the larynx, for supposedly the giraffe is the only animal that makes no sound. We wondered whether it was because his neck was so long, or whether he really had no means for producing a voice.

In the exploration of that eight-foot trachea, the Chief was almost lost. He disappeared into the great neck, arms and shoulders, but he found a curious and

most adherent hyoid bone, protecting the soft tissue necessary for swallowing. The giraffe has no vocal cords, which accounts for its being "soundless."

To my "Why?" the Chief replied, "One would as soon expect the mimosa tree to have a voice, as the giraffe, for the giraffe's habitat being the plain, he can always see, and unless there is a scarcity of plains animals, the lion does not molest the giraffe, so the giraffe has no enemies save man."

While the boys worked in unison to bring the heavy specimens to the scales to be weighed and to load the head and the great neck onto the lorry, they sang lustily in rhythm.

Mr. Fuller rode back with the lorry to the laboratory, as he wanted to skin and cast the 407-pound head and neck. On the way back the lights went out, but that did not deter the native driver. He never slackened his thirty-five-mile pace through the forest, nor did the boys cease their loud singing.

It seemed inconceivable that the native boys could ever move the giraffe's body onto the lorry, but singing in unison gives a push and a pull, and there were thirty of them. That surely is the way the Pyramids were built.

In the moonlight we could see the big vultures swooping over us. A tree not far off was filled with

them, and marabou storks were patrolling the sand as if they had put in their claims. Having seen the development of the brain of the vulture, and having noted the weight of its eyes in relation to that of the brain, I am sure that even in the moonlight it was by their eyes and not by their sense of smell that the vultures located us tonight.

It was four in the morning when we folded up our instruments, but the work was completed, even the casts had been made. The giraffe weighed 2,689 pounds, and as we turned in, hyenas started their chorus of the dawn. We had set for them a bountiful table.

MAJI MOTO CAMP

DECEMBER 13, 1935

WE took today as a day of rest, sleeping as late as we wanted—which, however, is never very late in the tropics, as dawn bursts suddenly upon the world and the birds are noisy with their raucous song. There is a monotonous little creature in a tree near our hut that, late and early, sings over and over again, “me, re,

do," until I long to excite it and see if it can strike "sol" or "la." This morning, however, I was awakened by a song as cheery as a canary's; and when I peeked out, I found it was a tiny black and white weaver-bird marching back and forth on our little porch, singing as lustily as if it were the herald of the dawn.

Mr. Fuller has decided that this spot is so ideal for a bird group that he will collect a Lake Manyara Bird Group for the Cleveland Museum of Natural History, making the setting the beach of Lake Manyara, with the escarpment on one side and looking out into the volcanoes of the Rift Valley on the other.

Every believable kind of large bird congregates here—ostriches, greater and lesser bustards, crowned cranes, marabous, Abdim and European storks, eagles, vultures, secretary birds, pelicans, egrets, flamingoes, geese, ducks, grouse, partridges, plovers, brilliant blue rollers, ground-hornbills—and, of course, many different varieties of smaller birds. Yet, in spite of this bewildering abundance of bird life, one does not hear as much bird song as in our own American woods.

We have found the dissections of some of these large birds most interesting. The eyes of an eagle, for instance, weigh one fifty-fifth of its body weight, and one eye weighs more than its entire brain. The eye is

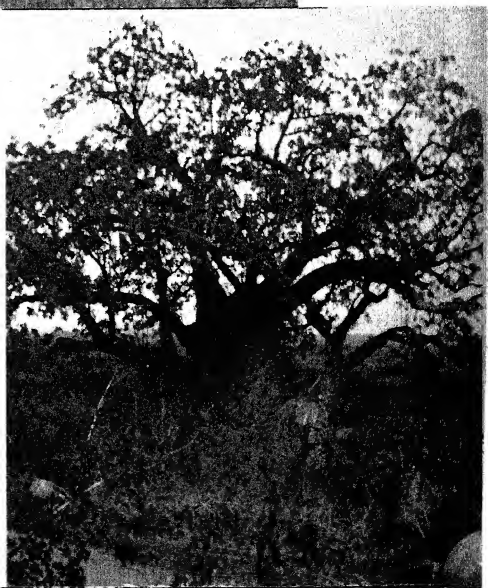
the brain of the eagle. The eagle has to search for its prey. It has to work fast, and near the ground. Keen eyesight, powerful wings, sharp talons are the requisites of an eagle. An eagle is an individualist. It works alone. It does not live by coöperation. Were it to kill, then wait for its mates to share the feast, the kill would spoil. Therefore, keen eyesight means life to the eagle.

One of the native boys was stung by a scorpion this morning. Immediately his hand began to swell. The Chief excised the wound. The lad never flinched. Like the Chinese, the African native seems to have less sensitivity to pain than the white man. It must be that he is a less sensitive organism, rather than that he possesses such extreme heroism, as the physical ordeals that the native boys and girls endure in their circumcision rites are unbelievable. Natives, like wild animals, seem to be able to withstand festering sores and terrible lacerations, but disease, particularly diseases of the lungs and bronchial tubes, takes a heavy toll among them.

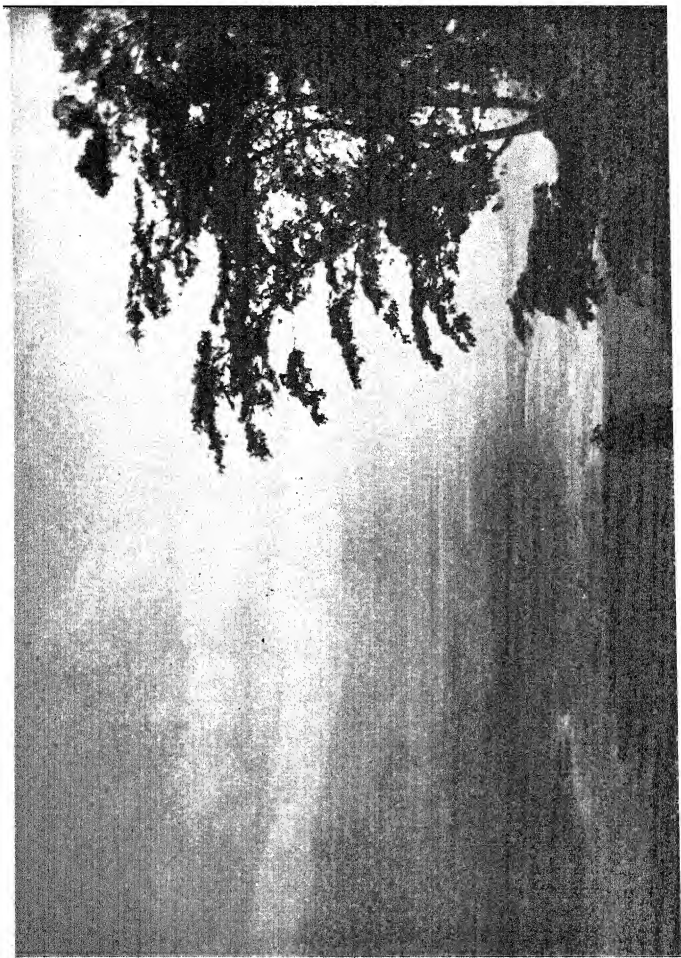
Skinning the heads, preparing the masks, and chiseling out the delicate brain from its hidden pocket, in these massive skulls, require exceptional skill. Most of today, Mr. Fuller and Dr. Quiring have worked at these tasks, accomplishing what, to me, always seems a work of art.



FISH VENDORS *at*
Mto Wmbu
PHOTOGRAPH BY
ARTHUR B. FULLER



A BAOBAB TREE



THE CRATER OF
NGORONGORO

Like the rhino, the giraffe had much skull and little brain. Although there was a difference of nearly a thousand pounds in the weight of the two animals, the amount of brain that directed these two great mechanisms was nearly the same. But the comparative difference in the weights of the eyes, in view of the varying characteristics of the two animals, was significant. The weight of the eyes of the rhino was one twenty-ninth of that of its brain, while the weight of the eyes of the giraffe was one-fifth of that of its brain. Perhaps, through disuse, the sight of the rhino is retrogressing.

At dinner tonight we had a most interesting discussion as to why the horns of the giraffe are covered with skin. The giraffe is said to be a link between the deer family, the ox, and the buffalo. Like the buffalo, he chews his cud.

The giraffe now has no need of horns, but perhaps in the past, when he was a smaller animal with a shorter neck, like the gerenuk, the giraffe had need of horns. The only explanation that could be offered was that, according to the Law of Use and Disuse, the horns of the giraffe are slowly retrogressing.

The native boys have been groggy all day from giraffe meat. The long sinews they are drying to use on their bows, and the large bones have furnished

them an orgy of marrow. The big tibias of the forelegs, however, we are keeping. They are long enough to make standing lamps.

MAJI MOTO CAMP

DECEMBER 14, 1935

The Buffaloes

I AM sitting in a comfortable folding safari chair on the edge of a great green forest. Vultures are circling overhead. The sun is high. It is hot.

A 600-pound scale is slung over a bough of a big acacia tree. The Chief and Dr. Quiring are dissecting a huge bull buffalo, the length of whose horns, from tip to tip, is $47\frac{1}{2}$ inches, and whose weight is 1,674 pounds. The hide is half an inch thick. The great head weighs 264 pounds. Mr. Fuller has left with it for camp in order to make a plaster mask. My duty is to weigh, and, slowly, the native boys bring the specimens to me until I have weighed the whole animal.

But while the Chief is holding a clinic here, Dr. Carr is holding one just a few yards away, and Dr.

Quiring another, for this morning three bull buffaloes, each with horns of 42 inches in length, and more, were shot within fifty yards of each other by Captain Hewlett, Mr. Fuller, and Dr. Quiring, and they dropped at the three points of a triangle just inside the forest.

Already the boys are sharpening sticks and collecting meat for themselves, hanging it around their necks for safe keeping. Tonight it will be strung around the fire, on ropes, on sticks, on trees and bushes, to dry out for their needs.

Although it is high noon and we know that most animals are in the deep shadows of the forest, the shade here is just heavy enough to make even a bird's call startling.

The buffalo, I think, is the handsomest of all African animals. He is massive but not clumsy. His coat is sleek; his neck, powerful; and his horns, expanded over his forehead, give almost the impression of a heroic mask. A rhino looks ugly and temperamental. One would know at sight he could not be depended upon; but it is difficult to believe a buffalo vindictive or treacherous; they look so beneficent.

The tragedy of the unscientific secretary occurred today. We have not collected the adrenal-sympathetic complex of the various animals heretofore, but today Dr. Quiring and the Chief did. I, not knowing one

when I saw it, thought it was fat; so, after weighing it, discarded it.

Later, at the laboratory, Dr. Quiring asked me in what jar I had placed the complex. When I learned the truth, I was inconsolable. I sent some native boys out to see if they could find it, as I had dropped it, wrapped in a bit of gauze, right where I was sitting. But the gauze was pecked full of holes. It was frayed, torn, and tattered, and perched on the trees were well-fed and contented vultures.

MAJI MOTO CAMP

DECEMBER 15, 1935

THIS morning Captain Hewlett, while scouting for elephants' spoor, passed our buffalo kill. Only bones remained. A hyena and a few jackals skulked away as they approached but, from the spoor, he judged that lions had not been on the kill.

The cycle of death and decay in Africa is swift. A

kill means each will have its turn. Hyenas and jackals usually wait on the lions; vultures and storks sit by until the hyenas and jackals finish; great beetles and ants waddle off with coarse bits, and blow-flies and bacteria take what the beasts and insects leave. Although we have motored many miles, we have seen but few bones. Hyenas carry them away and crack them up.

The hyena has a huge head, out of all proportion to its body. Its jaws are powerful, its teeth strong, the muscles of its head, neck, and shoulders massive. It is the embodiment of ghouliness.

I am supposed to catch up with our records today, but early this morning birds began to pile in—particolored shrikes, glossy starlings, doves, tiny barbets, spur-fowls, hornbills with strange beaks, cuckoos, and black and white kingfishers. We could not stop Mr. Cooper, who is intrigued by bird collecting.

When Captain Hewlett returned, he brought a beautiful waterbuck, which kept us busy until late afternoon, when I went out with him to scout about.

Just as we were coming back from watching the troops of baboons among the impalas in the forest close by, there at the turn of the road, right in our own bush, wallowed a rhino in the dust.

We blew the horn. He paid no attention. We

changed our position so that he would get our wind. He rose, snorted, pirouetted, making clouds of dust and short starts in several directions. We approached nearer and nearer until we were within fifty feet, when suddenly the blowing of the horn seemed to make him realize that the trail was ours and he trotted off complacently into the bush. But not so Dr. Carr's rhinos. He saw five rhinos this morning, one of which galloped after the car for some distance.

This morning there was not a European stork to be seen; but this evening, everywhere, so close we had to shoo them off the road, as far as we could see, on every tree, on every bush, on the sands, on the plain, were the beautiful Holland storks. There were so many and they were so graceful as they sat closely huddled together on the branches of the dead trees, that Mr. Fuller went out to take some pictures of them. As he was trekking through the high grass, he suddenly heard a sound as if some great animal were crashing through the bush. He turned, and saw a limb, laden with storks, crash to the ground, precipitating general confusion.

MAJI MOTO CAMP

DECEMBER 16, 1935

Ngorongoro Crater

WE left at five-thirty in the morning for Ngorongoro Crater, and after stopping at the native Indian Village of Mto Wmbu, some nineteen miles distant, to buy bananas, we passed the clear rocky stream from Ngaruka where we send daily for our drinking water. Even then we boil it. It comes to us in petrol tins and it is boiled in petrol tins. An ode should be written to the petrol tin!

The frequent rains have changed the aspect of everything. The grass is green, and as we began to climb the escarpment, dainty, low-growing petunias bloomed on every side of us. With each hundred feet, we came into deeper and deeper forest and more and more tangled jungle, which allowed only occasional peeps at Lake Manyara, the distant plains, and the far distant volcanoes of the Rift Valley. I doubt if even a Turner could convey the shifting beauty of the shimmering colors on canvas, and make it seem real. Even

the clouds seemed distant mountains and changed from brilliant purples to blazing pinks.

In the mid-day sun, Lake Manyara steams and smells like the ocean shore where quantities of seaweed lie decaying; but in the evening it is a delight to skim over its golden sands—as beautiful a speedway as Ormond Beach—and to see every kind of bird; while in the grassy plain that edges the beach and in the bush near-by grazing giraffe, impala, reedbuck, wildebeest, zebra, ostrich, wart-hog, hyena, jackal, are always stirred up, and almost too frequently rhino, elephant, and lion as well.

In climbing the escarpment, we ran into forests of the big baobab trees—marvelous great gnarled trees, hollow inside, with diameters often of twenty feet or more. We stopped to examine their empty trunks, which often during the rainy season fill with water, forming natural cisterns. As we climbed higher we saw many trees in flower. The road was an easy ascent; the distance to Ngorongoro only sixty-five miles from camp.

When, in 1927, we climbed the escarpment from Ngaruka, the ascent was rugged, rocky and difficult. It was March then, and the escarpment showed a riot of bloom. But now the flowers are just budding, in

fact, the trees in our camp are only now coming into leaf.

The crater of Ngorongoro is 12 miles in diameter. It is surrounded by a rim at least 1,500 feet high. Within its soil of deep volcanic ash the tropical sun produces a growth of sweet clover so luxuriant that it supports thousands of herds of antelope and of other herbivora and carnivora as well. The Chief described it as a great cauldron in which, for centuries, the soil and the sun's energy have been producing cycles of soil, clover, wildebeest, and soil again. A constant stream of wildebeest, lion, jackal, goes in, and whatever comes out of the soil soon returns to it, for all are produced by energy from this great volcanic pot, and all return to energy again.

Although we had built up such an anticipation of seeing Ngorongoro, when we finally found ourselves on its rim, peering down into its depths, it was so immense it was impossible to appreciate its grandeur. Grandeur, in fact, is not the word. One speaks of the grandeur of the Grand Canyon, but the Grand Canyon is rugged and bleak and grim, while Ngorongoro is a soft bowl of gigantic size, its sides lined with gray-green forests, its floor spotted with dry sands, green marshes, clover fields, sparkling streams, and silvery

mists. We sat on its edge—not at all a beetling edge—enthralled by its beauty. With the aid of binoculars, we could make out hundreds upon hundreds of grazing game.

Beyond—on this side of the escarpment—rise the volcanoes of the Rift, and on the other side of the escarpment and but a few feet away from the narrow high road, lie the apparently illimitable Serengeti Plains, 'stretching out—out—until they are lost in a shimmering haze.

On the way back we stopped to see the site of the Ngorongoro hotel. The Government built this road to Ngorongoro and is now building a series of guest-houses, single log cabins on stone foundations, and a mess hut, so that visitors may remain long enough to see the sun rise and set over this edge of the world.

While descending the escarpment we saw several naked native children darting, like frightened antelopes, from the road into the bush. We stopped, wondering where they came from and where they were going, as seemingly impenetrable jungle lined both sides of the road.

Suddenly in the shadows of the forest we saw a native hut, then, one, two, a dozen children—children of all sizes—many with babes on their backs, and all naked.

Over this small cleared area the branches of the great trees met. There was no sun and hardly any light—just shade and the curling smoke from a meager fire, over which two naked women bent, apparently warming themselves.

We looked for a “mealie” patch. There was none. There were only wild bananas. The jungle alone must have yielded subsistence to this little group.

A little further on, I spied, just off the road, in the high grass, a freshly killed serval. We have been finding difficulty in collecting the pursuit animals—the leopard, the serval, the chita—so we picked it up. It had been recently killed by a leopard.

For days we have endeavored to trap or hunt leopard. Mr. Cooper superintended the making of a leopard trap of stout bamboo, bound and tied by strips of zebra skin. It contained two compartments, separate from each other, one for the bait—a live goat—the other for the leopard.

Native boys have been out all night, endeavoring to locate leopards. We have moved the trap from place to place in the forest and on the plain. But the leopard is always too wary. However, now as a temporary staff collector of our expedition, the leopard had laid its specimen at our feet.

We arrived home in time for tea and found the

Chief Game Warden of Tanganyika and his wife, Captain and Mrs. S. P. Teare, visiting us. They came in a fully equipped lorry. They had three native boys with them, and when we arrived, their tent, their beds, tables, and chairs were all set up, in between two of our huts. They had had tea and were quite content. Thus they spend their life, moving from place to place to study the problems of game conservation in Tanganyika.

After dinner we speculated on many things: Why animals grow so large and so powerful in tropical Africa; why these rifts occurred in otherwise flat Africa, and why in the midst of all this drama of wild life there seems to be only peace. It is as if a balance of nature had been struck, for here in the Rift Valley all animals live together in seeming harmony—those that prey and those that are preyed upon, and with no natural protection. The native hut is no real protection. The lion has no lair.

Moving about freely, some on the plains, some in the jungle, some in swamps, some in trees, are browsing and grazing animals, monkeys, carnivora, native Masai and their cattle. "Undoubtedly the camp is known to all the animals in this area," the Chief suddenly remarked; then explained that "just as intangible en-

ergy brings us in contact with the world through the little radio in our mess tent, so intangible energy, through light waves, sound waves, and chemical emanations, stimulates the eyes, the ears, and the nostrils of all the animals about us, apprising them of our whereabouts," all of which is perfectly true but a little jittery as I look out into the moonless night and hear old Simba starting his evening challenge.

A most illuminating discussion then arose of the way the natives live among lions, day and night, and how herds of antelope, gazelle, zebra, and groups of ostrich loiter over the plains in what they must know is lion country. Captain Teare remarked that when lions pass near herds of zebra and antelope in the daytime, the antelopes graze along, apparently unconcerned. They seem to understand that daylight is not the time when lions make their kill.

A discussion of how a lion kills brought out many interesting points. They hunt in pairs or in groups. If in pairs, it is generally believed that the male takes a position upwind, while the female is ambushed downwind. When the male roars, all the animals rush at top speed in the direction of the lioness who springs upon her prey at such an angle that she grasps the nose and the neck with her forepaws and then, falling

with her prey while still holding its head firmly, the animal catapults on over, inevitably breaking its neck, near the junction of the head.

Captain Teare said the marks of the lion's claws are often to be seen on the skin of the face and the neck.

The lion's favorite food is zebra meat. They usually tear their prey open, first drinking the blood, then eating the stomach, heart, liver, lungs, etc. Civilized man eats brain, liver, heart, kidneys, marrow, pancreas, thyroid glands, lining of the stomach, and covering of the intestines. Natives do the same. The lion and man discard the spleen. Evidently it carries no nourishment.

Beside being an accurate anatomist, the lion is a practical dietitian!

MAJI MOTO CAMP

DECEMBER 17, 1935

IN the early morning, just at dawn, we all left, to prove to Captain Teare that we had rhino in this region. We saw five this morning—two old bulls and

a pair with a mtoto—six buffaloes, many varieties of antelope, zebras, jackals, hyenas, and wart-hogs.

An old wildebeest out on the sands, isolated from the herd, arrested my attention. Near it, lying down, was what I supposed to be a small wildebeest; but as we approached, it arose and, to my surprise, it was a hyena, that left reluctantly, looking back occasionally as if he wished he had not been interrupted.

The wildebeest grazed on, paying no attention, in no way disturbed, and yet the hyena is a natural enemy of the wildebeest. The question at once arose: Is it a sick wildebeest? It is not grazing with the herd; instead, it is on the sands alone. Or can it be a pregnant wildebeest that is soon to calve, as it is known that hyenas follow such animals and snatch the calf before the mother can protect it?

On our way home Captain Hewlett pointed out to us a lion kill. In view of last evening's conversation we all wanted to examine it. On the skin of the nose we could see the marks of the lion's claws, and the neck was fractured exactly at the point where death is instantaneous. Such a death, violent as it is, is certainly easier than starvation, disease, or being wounded by man and left to fate.

Today we carried our cards from Number 88 to Number 114, and our specimens included doves,

hoopoes, sandgrouse, spur-wing plover, pure white egrets, helmeted guinea-fowls, eagles, flamingoes and marabou storks. While Mr. Fuller was busy with the birds, Dr. Quiring and the Chief were more than occupied with baboons and monkeys, a big ostrich cock, an ugly barbel, two jackals, a bushbuck, and my Tommie.

Fortunately, the dinner hour is flexible. We have to take our specimens as they come, and many nights find us working late.

Our ostrich today weighed 273 pounds, yet the weight of each eye exceeded that of the entire brain. The ostrich, like the eagle, lives by its eyes.

Ostrich plumes are drying on the eaves of our hut tonight, and the native boys are all wearing feathers in their sandals.

MAJI MOTO CAMP

DECEMBER 18, 1935

My Tommie

A WEEK ago, Captain Hewlett brought to camp a baby Tommie and gave it to me. It had become separated from its mother. At first the native boys in-



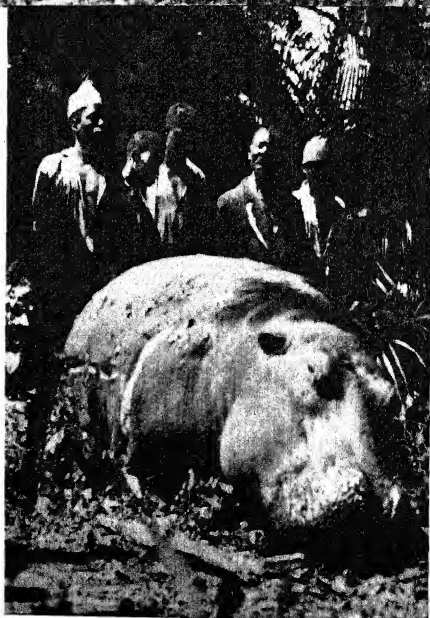
MY TOMMIE
 PHOTOGRAPH BY
 ARTHUR B. FULLER



WILD MONKEYS *in*
Our Camp
 PHOTOGRAPH BY
 ARTHUR B. FULLER



*A 12-foot BABY
HIPPO Weighing
1,200 Pounds*
PHOTOGRAPH BY
ARTHUR B. FULLER



AN ADULT HIPPO
*Weighing a Ton
and a Half*

tended to catch it and take it back to its herd, but it ran out of reach of the herd. This little Tommie could not have been more than three weeks old.

Trembling, it lay still, like a little dead thing, in my arms. It seemed to be in shock. I wrapped it up, gave it warm water with a dropper, and left it alone. By noon the next day, it knew me and was unafraid. The day after, it followed me about the hut. After three days it was actually sucking milk from a bottle and eating grass. The fact that it was grazing, made us all feel it would live.

This little Tommie was such a responsive little thing, bleating a welcome whenever we entered our hut, following the Chief and me everywhere, and rubbing up against us as if it really cared. One day the Chief went outside our hut onto the little porch to write, leaving Tommie inside, but it made such a racket, even trying to jump through the screened window to him, that the Chief had to get it; and the minute it was near him, it snuggled down at his feet, contented.

After a night or two, Tommie discarded its little box, and was much disturbed when I tucked myself under my mosquito-net, trying to get under too. Tommie's nose went into everything—my shoes as I put them on, my tub as I stepped into it.

Although Tommie at once made friends by rubbing noses with our wildebeest, it was at first terrified by the dogs. Finally, even the dogs became a harmless action pattern to Tommie.

Tommie was so different from a puppy. Puppies are civilized little things; Tommie was wild, always alert, afraid of everything. It was such fun making it believe in us. When anything the least unusual occurred, Tommie would either crouch and freeze, or try to leap away. When we took it out in the open area about camp, it would stand still, moving its ears, eyes, and nose tensely in a slow semicircle way round to the middle of its back, then slowly, round again, completing the circle. Thus, over and over again, it would sweep the horizon. We always wondered if it was searching for its herd. It learned the simple things easily, establishing the good manners of a household pet. It always slept under my cot, but all through the night it wakened me with querulous little "baas." If I said, "All right, Tommie," it would stop. If I did not, it would bleat louder and more insistently, continuing until I assured it I was still there. When I worked in the laboratory, Tommie was always at my feet.

On the afternoon of the eighteenth, it seemed quiet.

We had given it only one part milk to ten of water, so I put it on water altogether and placed it in its box on our porch.

Usually when we came to bed, Tommie greeted us. But tonight it did not move. We went over to it and found it in a strange position, its eyes staring. It was unconscious.

In the early morning, Tommie died.

MAJI MOTO CAMP

DECEMBER 19, 1935

EARLY this morning, just after dawn, I missed the Chief. When I looked out of my window, there he was in pink pyjamas, pith helmet, and mosquito boots, sitting in an arm chair, out in the open plain, writing up my Tommie. The wilderness is certainly his element!

Captain Hewlett is just in. It is eleven o'clock. He spent the night fifteen miles from here, tied in a tree which bent low over a hippo swamp; but although

he heard hippo and leopard, and saw fresh elephant spoor, he was unable to get anything. He is hungry, unshaven, dirty, muddy, buggy, and he says he is groggy, although no one would suspect it.

He reports seeing a lovely gray-blue eland near by, and even a herd of elephants; but the herd consisted only of young cows and young bulls, and we do not want adolescents.

We all are having great fun speculating on the energy system of various species before we get the specimens, then comparing it with reality; and it nearly always comes true. The various species fall right into their niches in such a way that the theory clarifies itself.

Just as an engineer can predict the range of activity, the speed and power that are the behavior characteristics of various types of engines, so when one dissects an animal and observes its energy system, one can predict approximately the behavior characteristics of the species to which that animal belongs; or if one knows the behavior characteristics of an animal or even observes carefully its special senses, one can predict with approximate accuracy the sizes of the organs that constitute its energy system.

Betting on the weights of the various animals has become quite a game among the men. In the wilder-

ness, even several cigarettes make a worth-while jack pot! Rowland Ward, Lydekker, and others must in many cases have estimated weights. We have found that a zoo lion may weigh 600 pounds, but that a big, well-fed one in the wild seldom tops 500 pounds.

Captain Teare, the Game Warden of Tanganyika, was so interested in our weights that he asked for a copy of them. We also are going to turn over to him our sleeping-sickness medicine as there is some sleeping sickness among natives not so very distant from here. There is also constant trouble in this district with the cattle. Captain Hewlett says one cannot use mules out here much longer than six months, and even then it is necessary to administer arsenic to them to keep them alive that long.

Four little wild monkeys run around our camp—a male and a female with two babies. They are really wild, yet sufficiently sophisticated to know that food comes easily out of bags of corn; and that if they come close enough, bananas may be forthcoming.

The four were in a tree near Mr. Fuller's hut this morning, and so the Chief and I went out with bananas. It was an intrepid baby that was venturesome. He was the first down the tree, slowly and cautiously, to be sure,—a little further, foot by foot, watching me all the time with his little brown eyes—my body, my

hands, then my eyes, until finally, his eyes fixed on mine, he rushed forward, snatched the banana, and leaped away. But all the rest of the family were after him. At least six times he ventured and won, but never for long, as father or mother always bowled him over and took away the prize.

I cannot believe that half of our time has gone. As to news, we know nothing of the outside world. Through Mr. Cooper's radio, we occasionally pick up Germany or Italy or Nairobi, and once in a while, Pittsburgh; but it is only music or baseball or cricket scores that we get.

Nevertheless, like Stanley, we all feel that "no luxury of civilization can be equal to the relief from the tyranny of custom. The heart of Africa is infinitely preferable to the heart of the world's largest city."

Lying in Bed at Night

Lying in bed at night in our little hut; peering out through the window—screened, then secured from leopard by stout chicken wire—into the white moonlight that illumines the grassy plain right at our hut's edge; feeling the balmy breezes in one's face; hearing the lemur's scream, the hyena's soft cackle, and the lion's grunt; catching the scent of the logs burning in

our compound, as well as an occasional pungent animal odor from our lightly buried laboratory discards; hearing faintly the ever-present rhythmical song of the natives at work, at play, or alone; realizing that a great vulture has suddenly lighted in the tree around which our little hut is built and whose branches shade our thatched roof, or that a dainty black and white weaver-bird has taken his stand on our little porch to herald in beautiful song the coming of another dawn—this is Africa.

It was on just such a morning, while lying in bed awaiting the coming dawn, that suddenly my bed rocked. I turned, wondering if Jaruga could have miscalculated the position of some morning star and called us too early, or if I had forgotten that this was the morning we were to be off for elephant. But no, there was no Jaruga. My bed—the whole hut—seemed to be shaking. I said, "George, can this be an earthquake?" He replied, "Yes, it is. I did not know you were awake. The earth is still trembling. Remember, this may be followed by more."

After this admonition, I waited silently, thinking, "Well, anyway, this is not the Empire State Building, and if it does fall, I think I could crawl out from under." Then it was over.

When we met at breakfast, everyone had felt it,

and everyone had at first thought his boy was shaking him—a suggestion at least as to how difficult it must be to waken one's "bwana" out in Africa.

My First Operation

For several days the Chief had had an itchy spot on the back of one leg, just above the knee, and out of reach of his eyes. Suddenly it became sore and he called for advice.

My diagnosis was a broken-off thorn, as in the midst of a slightly reddened area I could see a little black spot and beside it a slight whitish patch which did not resemble pus. I wanted to put on hot packs, but he insisted that I open it with a sterile needle. He would not trust me with a knife. There was no result, and so I put on iodine and a dressing and left it open.

The next day the area was larger but the general appearance was the same. We called Captain Hewlett in consultation. He felt it was merely a thorn, and as it was still open, we applied more iodine.

The following day it was actually sore, so we consulted our native boy. He pronounced it a boil—not a mdudu (insect)—but I did not believe it.

So the next morning the Chief allowed me to try again and I lifted from the wound a black-headed

mdudu, or a sac of eggs, which had a little black top or head. When Jaruga came in, I proudly displayed it. He said, "Mdudu—must kill," and promptly speared it through the center, then threw it out and, rhino-like, ground it into the dust.

So constant is this insect enemy in Africa that even in a house which is new and clean, one must not put one's bare foot on the floor, lest mdudus deposit eggs under the nails. If one walks in stocking feet, the mdudu invades the stocking and does its work later. If shoes are left on the floor, the mdudu installs itself and works while one walks.

If one's washing is unironed, the mango fly deposits eggs on it, which worm their way into the skin. If the window is open, mosquitoes enter; if closed, the air is close. So indoors and out-of-doors, the visitor on safari in Africa has often to cover his head with mosquito-netting, his hands with gloves, and his feet with high boots.

During the middle of the day, no menace is on the wing, but it is then too hot to do anything! Out-of-doors ticks inhabit one and stick.

There are many varieties of ticks. One is no larger than a grain of pepper and is bright red. This kind one can feel taking long excursions over one's body; but these are difficult to catch. Other ticks are as large as

one's little finger nail. It is the spirillum fever tick, however, that is dangerous. This small tick, dusty-brown in color, hides during the day, so is seldom seen; but its bite is often fatal.

In Africa, everything carries parasites. The thorn trees are in competition with the ants which blister and pester them, orchids burden the trees, weaver-birds' nests bear down the branches, and hungry vines shut out the air.

From our lions' nostrils, yards of long, lean hair-worms marched to safety. Our zebras and antelopes have been alive with parasites, many of them being lodged in the sinuses. These grazing animals are living zoos. Every sort of parasite attacks them. Thus, in Africa, even while living everything is in the throes of death.

Ali and Jonah

Ali, a long, lank, toothless native—but evidently not without attractions, for he has seven wives—is Captain Hewlett's skinner. Although he has worked for white men for years, he knows no English. He does not know how old he is, but thinks he is eighty—eighty to him sounding well. He is a bit of a clown and always dresses himself up in every kind of a feather or tail. As a fixed

date, he says he was married to his first wife when the English came out to Kenya, but Jonah thinks he means when the English came to Tanganyika. At any rate, he insists he fought in the Great War and was a sergeant. He is a Mohammedan and says he is a medicine-man. He certainly has an eye for collecting for he collects fat from the marabou storks to cure ears; fat from the lion to cure chests; fat from the rhino to cure legs—and scissors, knives, and axes as well. We always know it is Ali who has “borrowed” our instruments, and when we demand them, he suddenly recalls that he took them, and cites a fictitious why!

Jonah is a Kikuyu and a Christian. His father and mother were in a mission. He speaks good English and is a most conscientious worker, having been trained to bird work in Nairobi. His interpretation of Ali is that he is a Mohammedan and that all Mohammedans are liars. Jonah has one wife, whose name is Helena. When he wanted her, he asked her to marry him and she said, “Go to my father and if you pay what he wants, I will come.” So he did, and paid six goats for her. Payments are made on the basis that six to ten goats equal one cow or bull. Sometimes fathers want goats, sometimes cattle, sometimes wine. Jonah went to a Christian minister who married them for seven shillings and gave them a certificate. When I asked

Jonah if he would marry another wife, he said, "No, one is enough for a Christian boy. If she die, I marry another. If I die, she marry another"—a perfectly reasonable deduction.

It reminded me of the story of the native chief, the price of whose daughter was two cows and ten goats. For two years she bore no child; so her husband wanted to return her, but demanded his two cows and ten goats back from her father. An argument ensued and the matter was finally compromised by the return of one cow and five goats, the father claiming the balance for depreciation.

Jonah is earning sixty shillings a month and his keep—"big pay," he says, as he received only forty shillings in Nairobi; but sometimes on safari they receive shoes, khaki shirts and shorts, as well, and that is "big help," he says.

He is a good boy, and is eager to learn. He asked me if we all live in the same city. He said the boys call me "mama" because they think Dr. Carr is my son. He asked if the Chief were a "cutting doctor," and was a bit confused over Dr. Quiring's being a "teaching doctor." He knew Dr. Carr was a physician, a "sick doctor," as he designates him. He asked why we were taking all of these brains and hearts and glands home, and why we cut them out; so I haltingly tried

to explain to a person who could not understand my language, a series of facts which I barely understand myself. As he thanked me with a deep bow, I must have put something across.

A Point of View

Even within our little group the question of war debts arises. Now that the American banks have so much money that is not moving, the non-payment of the debt by the English would seem to be justified, for, if they "did pay the debt, it would only make things worse for you and the world, wouldn't it?"—a curiously altruistic point of view.

The way this altruism works out, however, is amusing. The English tax the natives for "their own good," but even a few pence a year would seem quite a tax to a people who tuck themselves into the shade of the bush, wear skins, eat "mealie," live in houses made of mud and reeds, and raise only bananas.

The English out here complain of these "lazy natives who ought to be made to work"; but to us it is the same altruism that has made Italy want to conquer Abyssinia for Abyssinia's own good. Why should these natives need to work in a country which is their own,

and from which they can eke a living, just as the eland and the rhino eke a living from the bush itself?

The Masai are causing occasional trouble. I am told that they will not pay their head tax. To be sure, they have hundreds of cattle; but they are a nomadic people, wandering with their herds who supply them with everything: blood and milk for food; dung for building material; skin for clothing; urine for fluid in which to wash their calabashes. Their spears are their means not only of prowess within the tribe, as by bloodying the spear the young Masai becomes a warrior, but of defense as well; yet there are threatenings that their spears may be taken from them.

Physically speaking, the Masai are the most outstanding tribe in Africa. But they do not always conform, and then they become the "white man's burden." Yet today it is white man's diseases that have invaded many of these native tribes, diseases unknown to them until white man appeared, and *that* is the black man's burden.

It is all in the point of view.

The English we have met are distinctly anxious as to the attitude of America. "If England were in trouble, would not the English-speaking peoples side together?" Yet, when you ask them why they took no stand when the Japanese took Manchukuo, they shrug their shoul-

ders and seem to feel that Manchukuo is not in their line of Empire. One almost wishes it were, for the British Government has evolved a perfection through years of experience in the administration of native peoples. They have the finest corps of administrators—men of unimpeachable character, of high moral sense of duty, of accumulated understanding, and unique executive ability, owing to self-discipline, to close co-ordination with the home government, and to undivided responsibilities. One is always impressed with the uniformity of viewpoint of these administrators of the British Empire wherever one meets them. They combine formality, courtesy, good sportsmanship, military discipline, and understanding of and justice to the lowliest subject. In the Territory of Tanganyika there are about four million natives and only several thousand whites; and all are governed by a small handful of such representatives of the British Government.

Perfect examples of just such representatives are: His Excellency, Sir Harold MacMichael, K.C.M.G., D.S.O., Governor of Tanganyika Territory, and Captain F. C. Hallier, Provincial Commissioner, who lunched with us a few days since, and showed a most coöperative and comprehending interest in our project.

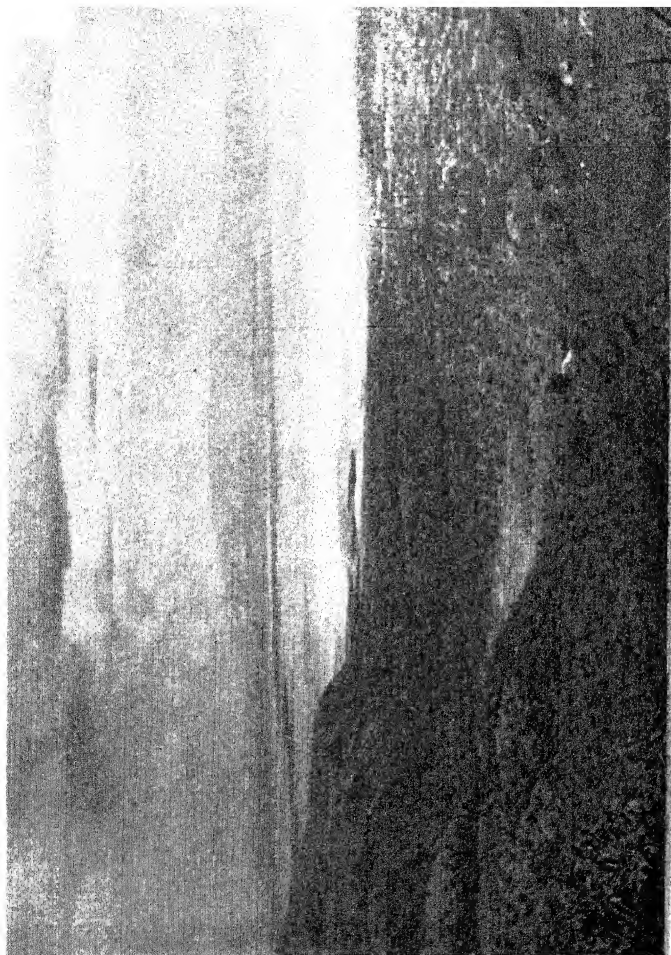
MAJI MOTO CAMP

DECEMBER 20, 1935

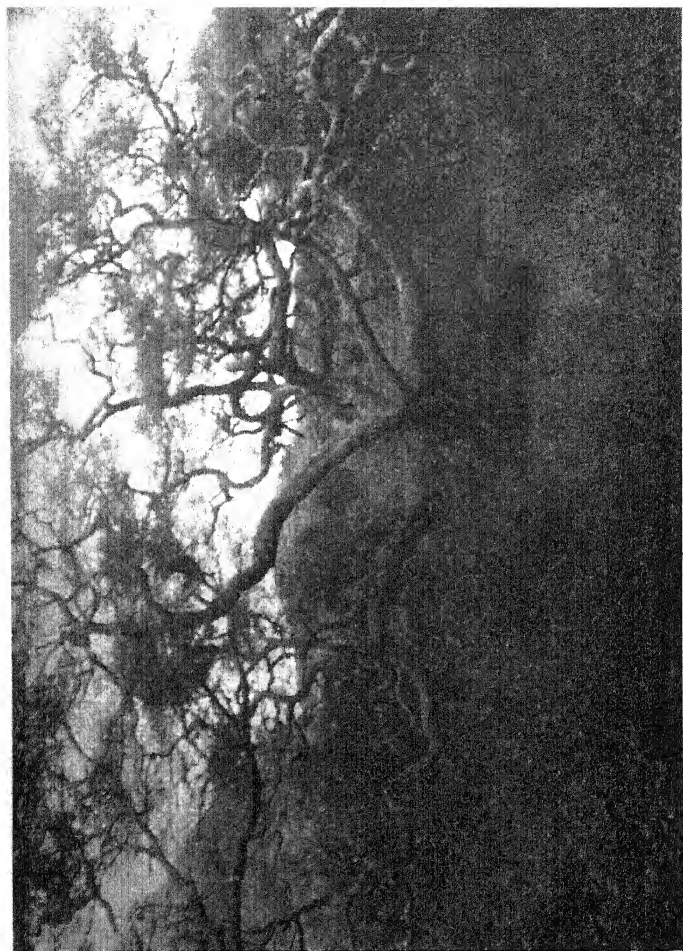
EVER since we have been here, hippos and elephants have been eluding us. The Chief, Dr. Quiring, and Mr. Fuller have taken turns with Captain Hewlett to circumvent an old bull elephant, but he has played "ring around the rosy" with us all.

We have tracked the herd of elephant, by following the spoor and dung right up to the camp, through its outskirts, off again to Maji Ya Moto Springs, and back to camp again, only to lose them. Sometimes rhino or buffalo spoor have come in, in such numbers that the huge elephant tracks have been obliterated. At other times we have felt that the elephants were lurking in the shade, laughing up their trunks because we could not find them.

All of this time, one big bull elephant stuck close to the escarpment which hugs our camp. Over and over again he crossed the trail leading to camp, but when



VIEW from the
Escarpment
PHOTOGRAPH BY
BRYAN COOPER



ELEPHANT
COUNTRY
PHOTOGRAPH BY
ARTHUR B. FULLER

the spoor of the herd of cows was clear enough to follow, the old bull was always a day behind.

Yesterday morning, the Chief, Captain Hewlett, and Mr. Fuller were off before five in the morning and did not return until afternoon. They encountered five rhino in the thick bush. Once, one snorted and started for them head on. With guns cocked and ready, they stood their ground, making not a sound, when suddenly the old fellow stopped, cooled off, turned right about, and disappeared into the forest. There is never any certainty about what a rhino will do.

Another time they found themselves in the midst of a large herd of buffalo, concealed but absolutely silent, when suddenly the entire herd broke in all directions about them.

Rhino and buffalo excitement repeated itself many times during that seven-hour trek. A troop of baboons chattered and screamed as they scurried down the trees to safety, then barks and the breaking of twigs betrayed bushbucks escaping to cover, while, overhead, monkeys and parrots scolded and birds sang.

The jungle in which they were hunting consisted of scrub bush and head-high grass, scattered mimosa trees and flowering acacias, impenetrable thorn trees, stiff palms, and dense underbrush, the whole interspersed in every direction with game trails, which, the

Chief said, reminded him of the foot trails in Boston Common.

While following elephant spoor through this dense forest, Captain Hewlett and the native trackers were constantly speculating as to just how long ago certain branches had been chewed, just when this tree had been broken or that bark had been ripped off, and the age and the warmth of the dung. They were always testing the direction of the wind by throwing into the air fine ashes from their little bags. They were always listening along the trail of these 23-inch spoor.

As the jungle grew more and more dense, they expected more definite evidence of the proximity of the elephants. The day was hot. The little rains with their thunderstorms were supposed to be over.

Suddenly Captain Hewlett was on the alert. The native trackers instantly stopped.

Captain Hewlett whispered, "An elephant is just ahead."

The Chief said a low, rumbling sound was audible. In order to test the direction of the wind, Captain Hewlett shook his powder bag of ashes. All watched intently. They were in the wrong position for the wind, and so led by Captain Hewlett, cautiously they crept to a downwind position.

As the shot was to be the Chief's, he cleaned his glasses meticulously, wiped the dirt of the jungle from his eyes, carefully removed all dust from the sights of his gun, and hastily reviewed in his mind the exact position for the shoulder shot.

In the meantime, Captain Hewlett and Mr. Fuller cocked their rifles, making ready for any emergency. All was silent, everyone was tense. Noiselessly, a native tracker climbed an acacia tree, in order to locate the exact position of the elephant, when suddenly a flash of lightning revealed that it was distant thunder they had heard. So thick was the jungle, they had not realized that a storm had gathered.

In following elephant spoor one day, Captain Hewlett divided the party into two groups. With the native gun bearers, Mr. Fuller, and Dr. Quiring, were to beat the bush in which we knew the elephants were, in the endeavor to drive them down to the Hot Springs, their favorite haunt, where Captain Hewlett, the Chief and I were stationed. But no elephants came. It has been the same with the old kiboko, the hippo. Captain Hewlett has stayed up all night for him, tied into a tree, lest he fall out, or camped in the reeds by a marsh; but to no avail.

Up to the Hot Springs and back through our camp to the big swamps, then right up over the escarpment,

the big bull elephant traveled. It was amazing the distance he covered each day, breaking down trees, tearing off bark, stopping to loll awhile in a sandy dell. He never joined the herd. He apparently preferred no responsibility or wanted to be alone. After a few days the men felt that they knew the psychology of this old elephant.

No hunting, apparently, is so uncertain as elephant hunting. Elephants are here today and fifty miles away tomorrow. For this reason, no animal is so difficult to outwit as the elephant, and no hunting so taxes the endurance and the judgment of the hunter as does elephant hunting.

· From the size of the imprint of the hind foot of this elephant that we have been following, Captain Hewlett judges that it is an old bull with good tusks. If the imprint were smaller and more oval-shaped, he would think that it was a cow. But the fact that the length of the imprint is over 20 inches, makes him feel that it is a bull; and the fact that, instead of mingling with the herd, this elephant feeds alone, suggests to him that he is an old bull and carries good tusks.

Thus does an elephant hunter reason.

MAJI MOTO CAMP

DECEMBER 21, 1935

CAPTAIN HEWLETT feels a bit annoyed to be outwitted by this old tembo. In discussing it tonight, he decided it would be better to "lay off" the elephant for a while, so tomorrow morning, with Dr. Quiring and Mr. Fuller, he is going to scout again about the marsh for hippo. Some native boys have been stationed there for several days, and by this time they should have them located.

Jaruga, our personal boy, has a passion for laundering. I have to hide the articles that I do not want him to wash. Yesterday, he found the Chief's and my khaki work-trousers, and today I had to let out every seam!

MAJI MOTO CAMP

DECEMBER 22, 1935

The Hippo

I AM sitting in the midst of a thick jungle of monstrous vines, giant wild palms, and the brilliant yellow-barked fever trees. The grass is waist high. We are on the edge of a thick, slimy marsh. The reeds and the mud and the smell remind me of the Sandusky duck marshes, but the reeds are higher, the mud deeper, and the forest almost impenetrable.

A little after nine this morning, Dr. Quiring blew into camp and said it was all over. They had two hippos—an adult and a mtoto. The mtoto was already out of the marsh and they thought the native boys could get the other out soon.

The Chief, Dr. Quiring, and I quickly gathered together our dissecting equipment and lunch, for we knew it would be an all-day job, and started out—two trucks full, as we would need many native boys.

Soon we ran into thick jungle. Everyone kept his

gun primed. In and out, through head-high grass, over low shrubs and around big bush, we wound our way in the truck until we could penetrate no farther.

A quarter of a mile on foot then brought us to the loveliest naturally cleared space, like a nook in a beautiful tropical garden, and in the midst of it, occupying almost all the space, was a mtoto hippo—a mtoto though it weighed over 1,200 pounds.

The adult hippo was still in the swamp—so, all hands to the swamp! The boys dropped down to their hips in it; they fell; they splashed; they gurgled; they laughed; but, like the hippo himself, they liked the swamp.

They tied a rope around the great beast, and with b-r-rs and invocations to Allah, grunts, and song for a unison energy effort, slowly the great body slid over the mud and through the reeds to our little jungle park where I sit under a giant palm, my scales in front of me, awaiting the specimens.

The color of the skin is a dusky brown and is board-like, it is so hard in texture. Like fish and the large reptiles, it is light colored, almost pinkish-gray, over the belly. The skin alone weighs 446 pounds and is $1\frac{1}{4}$ inches thick over the back. Unlike the skin of the rhino, it carries no ticks, but in places is deeply scarred. Whips have long been made from hippo hide. In the

drab story of slavery, the "Kiboko" has been the instrument for ruthless driving.

The hippo is a clumsy-looking beast. It resembles a giant pig. Next to the elephant, the hippo must be the most bulky land animal in existence. Ours weighs a ton and a half. As Dr. Quiring, who is six feet tall, stands upright near the shoulder, I can see him only from above the waist.

· Captain Hewlett says that as a hippo waddles along on sandy soil, in between the imprints of the legs on either side may be seen a trail, as if something had been dragged along. This is formed by the belly as it scrapes the earth. The hippo will often forage two miles away from water. It eats so enormously that it is very destructive to a planter's garden. The stomach alone of our hippo weighs 824 pounds.

The short legs of the hippo remind me of fins; the feet seem small to bear the weight of the body; the flat tail resembles a rudder. The eyes set upon prominences, like those of the alligator and crocodile, are small. The ears are insignificant looking; so apparently the hippo is not easily disturbed by sound. Undoubtedly, it is the sense of smell that gives him his urge, and to that end its large nostrils are located on the upper surface of its enormous head.

Not being an anatomist, I had always supposed that

the long neck of the giraffe meant it had a few extra vertebrae and that the short neck of a hippo would mean he had lost some vertebrae. But the necks of these animals are just like accordions. They are either stretched out or pushed together. Both necks carry the same number of vertebrae. This, however, makes locating the thyroid glands a problem.

In the giraffe the nine-inch long, tapering thyroid glands were found seemingly up in the head. In the hippo, as in alligators and birds, the thyroid glands were found near the collar bone. I wonder where they were in the ichthyosaurus!

The symphony of insects as I sit here is almost deafening. Every kind of instrument is in the orchestra, but the one-toned drone of the blow-flies is the most distracting. Little fires are flickering about us and not only are tidbits being dried, but delicacies are being eaten. Hippo meat is of nice texture and tastes like pork. It is, however, almost alarming to see these native boys eat. They cut off long narrow strips of meat, barely warm it over the fire, and then, taking one end in their teeth, pull into their mouths as large an amount of meat as they can manage when with a single blow from their long wide pangas they chop it off close to their protruding lips.

As I look up, I see that the vultures are beginning

to take their stations in the sky; some are on the trees close by. During the day one seldom sees a vulture, but no sooner is an animal down than the sky is filled with vultures. They come apparently a long distance with and against the wind. It is as if they were spread out above the earth in some such arrangement as the stars, each watching the other and the ground. When one comes down, the whole line comes down. Each gobbles what he can of food energy, then lifts himself into the air to another high station in the sky. Thus each plains animal makes its final heavenly flight on the wings of a majestic bird.

A great tree just crackled, then crashed to the ground. For a moment, everyone stopped what he was doing and glanced toward the nearest gun.

We have missed Dr. Carr today—his fine companionship, his help, his interest and skill in dissection—and although he is winging his way to Cape Town, I know if he knew we had landed this old kiboko, he would wish he could fly back here.

It was quarter to five in the evening when we finally folded up our work and moved along through the shadows of the forest into the plain. The sun was beginning to cast a rosy glow, and for a few moments a herd of twelve or more giraffes were camouflaged in its flickering light.

Dr. Quiring and Mr. Fuller gave a most interesting account of their encounter with the hippo this morning. The native boys had been at the swamp, in the midst of the jungle, for several days, scouting for hippos, and had located them; so as soon as the men arrived this morning, they divided into two parties, Captain Hewlett and Dr. Quiring in one, Mr. Fuller and a gun-boy in the other, and the native boys began to drive the hippos toward them. The marsh was high, so that all that could be seen was the waving of the reeds overhead. When the men started to wade out into the marsh, they sank to their hips in the mud, and in places had to ride on the backs of the native boys who, in turn, sank to their armpits; so manoeuvring was difficult.

Once, instead of a hippo approaching Mr. Fuller from the marsh, it was a rhino that approached him from the forest. Then, as if the earth suddenly rose and delivered its goods at their feet, the reeds parted and there, not nine feet away from the little hillock of mud on which Captain Hewlett and Dr. Quiring stood, were the hippo and mtoto. They opened fire and Mr. Fuller joined the battery, while everywhere, in every direction, the reeds were undulating as the herd dispersed.

MAJI MOTO CAMP

DECEMBER 24, 1935

Our Visitors

THE night of Hippo Day, it rained in torrents and thundered and lightened. We knew it was an exceptionally heavy rain as the waterfall above our camp on the escarpment was roaring louder and louder.

The next morning when I glanced out of my window the compound seemed one great pond. Even the fire had gone out, but slushing about in the water, picking his steps cautiously, I saw a very nice-looking German, then another, and another, until I wondered if the Germans were taking Tanganyika as well as the Italians, Abyssinia. Breakfast told the story.

They were Germans living in Mombasa. They have lived there ten years. They are in the exporting and importing business and for a week-end had set out without guns and with only one extra tire to go to Ngorongoro. The rain not only bogged them, but caused them to skid sufficiently to explode an inner

tube. It was dark. They had no torch, so could only wait until morning to repair the tube. They were in a thick jungle and the first query was whether to put on the lights or not. Lights they knew were protective against lion and leopard, but buffalo, rhino, and elephant charge lights.

But what kind of country was this—lion or elephant country?

Not knowing the answer, they turned out their lights, put up their curtains, so that rhinos and elephants could not get their wind, and went to sleep. In the morning, they found themselves just a short distance away from the Maji Moto Camp signboard.

Just at sunrise they went out for a short run up to the Hot Springs in order to satisfy themselves as to the kind of country this is. They saw a hundred or more buffalo, several rhino, and a lot of plains animals—quite an eye-full before breakfast.

Up to the Baboon Water-Hole

For days the roar of the waterfall from high up on the escarpment back of our camp has seemed to call. Hyrax and baboon and lemur are there and, occasionally, leopard. Armed with big guns in case of rhino

in the near forest, we had twice attempted to climb to the Baboon Water-Hole, but each time rains had so swollen the streams that we could not cross unless the boys carried us. Finally, Mr. Cooper said we could make it, and so we started.

This little stream that tumbles down from the escarpment is our bath-water stream. Native boys bearing tin petrol cans on their heads continually go back and forth to fetch our chocolate-colored bath-water. Judging from the washing on the bushes that are near, it is the native laundry too.

We had hardly crossed this mountain brook before we found ourselves among big trees and pile upon pile of beautiful granite boulders, huge and smooth, up which and over which the Chief and I climbed on all fours, first to the lower pool, then to the high pool where we saw dozens of baboons in the trees and on the rocks coming up to drink. This is the "swimming pool." It is twelve feet deep, but pretty cold after a steep climb.

However, the sweeping view across the tree-tops, over the plain, to the beach, the lake, and the far mountains beyond, compensated. Beautiful Meru accommodated us for the moment by removing her crown of clouds and standing in her full stature, pink in the sunset's glow.

Climbing the Escarpment

As if it were not enough to gain a view from the Water-Hole on the Escarpment, the Chief, Mr. Fuller and I decided we would like a wider, or panoramic, view.

Mr. Cooper—young, ever-restless, out for adventure—assured us it was an “easy climb of only fifteen minutes,” a gradual slope up “a cleared trail,” and that he would take some native boys and we would have tea on the top of the escarpment.

No sooner said than we were off, as it was already four o'clock. For fifteen minutes it was a gentle slope, the next fifteen was hard going, the last fifteen actually put us, not on hands and knees, but flat as caterpillars on our stomachs.

We found this gentle slope of Mr. Cooper's to be the saw-edge of the escarpment. A precipice was on our right and a precipice was on our left and we had a strip not more than a couple of feet wide on which to cling. We could not turn around. We had to go up. I felt just like a fly walking up a ceiling but I had no suckers on my stomach or on my feet!

The boys went ahead to make a trail, slashing with their huge knives the thorn bushes—all that we had on

which to hold. Zip went one trouser leg. "Ouch!"—there was a thorn in the other.

When we finally had tea, it was on the beetling edge of nowhere, and getting down was just sliding down.

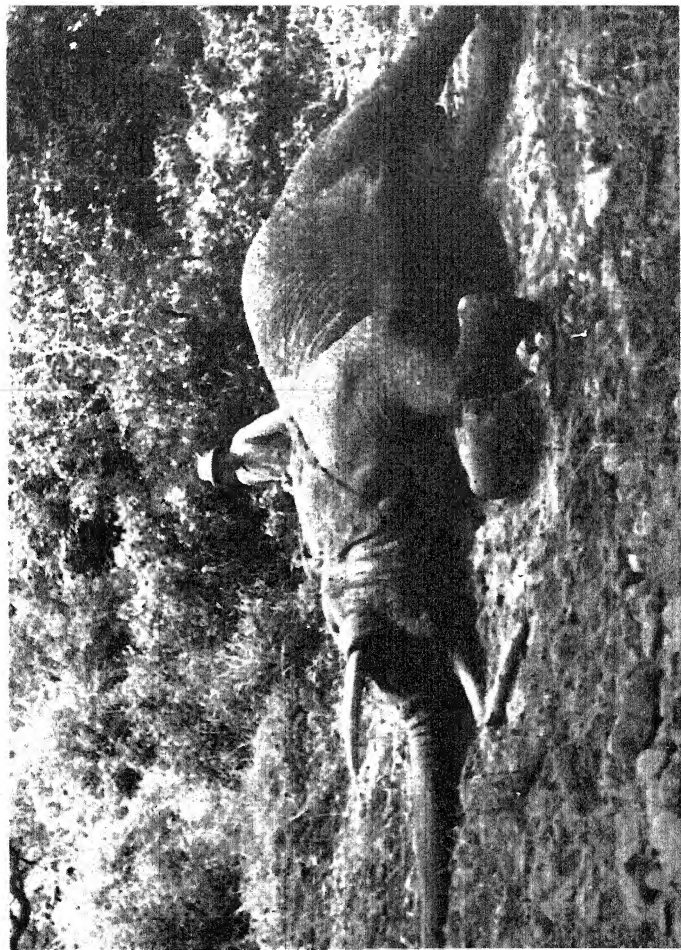
MAJI MOTO CAMP

CHRISTMAS DAY, 1935

CHRISTMAS dinner consisted of turkey, plum pudding from England, real brandy sauce made by Captain Hewlett, American mince pie and English fruit cake made by Mr. Cooper.

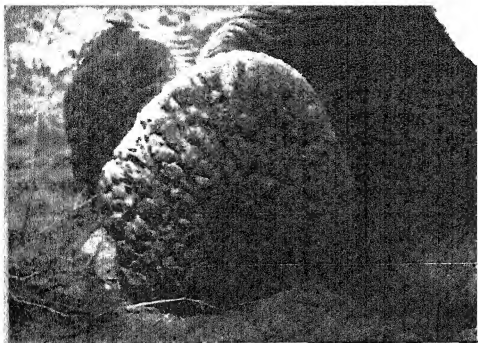
Mr. Cooper is really an entomologist. He is called "Bwana Mdudu" by the native boys because he collects mdudus; and wherever he is, his net, his box, and his microscope are always handy. If a chameleon, a scorpion, a toad or a mouse enters the dining-room, he is up from the table at once, chasing it; if anything large enough to shoot enters camp, he is after it with a rifle.

Life to Mr. Cooper is pretty much of an adventure, and recently even cooking has claimed his attention.



TEMBO
(Weight 14,640
Pounds)

PHOTOGRAPH BY
ARTHUR B. FULLER

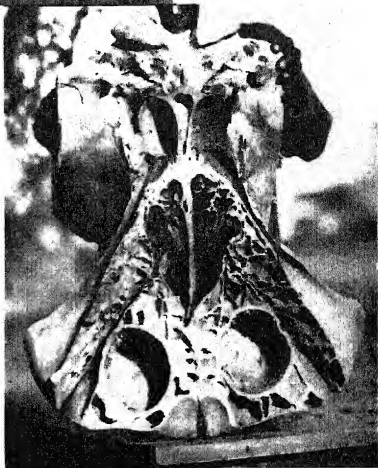


*An Elephant's
"FINGER-PRINT"*

PHOTOGRAPH BY
ARTHUR B. FULLER

*Cross Section of an
ELEPHANT'S SKULL,
Showing the Brain
Pocket and the Air
Cells*

PHOTOGRAPH BY
ARTHUR B. FULLER



*ELEPHANT SPOOR
Filled with Water*

PHOTOGRAPH BY
ARTHUR B. FULLER

He attacks it like a scientist, weighing out his ingredients on a milligram scale, and watching his cake bake through a microscope. His notebook carries measurements of mdudus, recipes for cake, trite sayings, funny stories, and information, accurate and scientific, upon every conceivable subject.

Last night Mr. Cooper brought in a tiny gray monkey that he bought at the Indian Village. The arrangement was that he pay one and one-half shillings upon delivery, but that if the monkey lives, he pay one-half shilling extra. It sleeps in a petrol tin in his hut, follows him everywhere, and aids itself in drinking from a bottle. Apparently it has a great affection for white people and an antipathy to every native, spitting at them, screaming at them, and actually striking at them. Perhaps it remembers having been captured.

MAJI MOTO CAMP

DECEMBER 26, 1935

Tembo

WE had planned to go to Ngaruka today for python, but last night the native boys suddenly came in with the news that they had seen fresh ele-

phant spoor. A heavy rain the night before washed out all spoor; so this meant that a herd of elephants had crossed the trail leading to our camp in the late evening and were going north into the forest along the Rift wall.

The only license that the Chief cared to take out for himself for this expedition was an elephant license. He had shot so extensively when in Africa, in 1927, that the elephant alone intrigued him this time and he was particularly anxious to try the shoulder shot on Tembo, with his Holland-Holland .465.

Long before dawn they started—the Chief and Captain Hewlett, with three trackers. Dr. Quiring, Mr. Fuller, and I had finished breakfast and were at work in the laboratory when the native boys returned, much excited. The word was “a Tembo” and that the “Cutting Doctor” got it. After a few scurried moments, we were off for a four-mile drive along the shore of the lake.

On the very outskirts of the forest we found the trackers waiting. Slowly, in single file, every other man with a big gun, we followed the sandy game trails through the thick thorn, in and around the large clumps of bush, around huge trees, the great gnarled branches of which reached at least 75 feet in each direc-

tion, over giant logs, with birds screaming overhead, baboons chattering, buffalo tracks everywhere, until finally a snort and a scuffle warned us that it was rhino country too.

Just behind us rose the escarpment covered with thick forest; just at our feet was a deep karonga, the sandy bed of which was now dry. We scrambled down its precipitous bank and over a few loose rocks, then mounted a turn, and there, right in the middle of this sandy river-bed, like a giant basaltic boulder, rose the black mass of the Chief's elephant.

From tip of tail to tip of trunk, the elephant measured 24 feet, 4 inches—the length of a good sized living-room. The height at the shoulders was 10 feet, 10 inches—higher than most rooms. The circumference behind the shoulder—his bust measure—was 15 feet, 8 inches. The tusks where they emerged from the skin were 17 inches in circumference; the hind feet measured 57 inches in circumference; the fore feet, 60 inches.

When we arrived, we found the hunters under a green fly, reclining in low folding chairs—a table before them, and while they were sipping their morning coffee, they told us the story. They picked up the fresh spoor, at least 22 inches long, right near camp. It was

headed north. They followed in the same direction, but along the lake rather than through the forest, and after a distance of two miles, sent the trackers in to cut across the forest to the escarpment, in the hope of locating the spoor, which they found still going north.

Three miles farther on, the trackers cut in again, finding the spoor still headed in the same direction. The third time they cut into the Rift wall, they found no spoor.

Obviously, the elephant was in between the points where they had last seen the spoor and the point where they then were, or he had traveled over the escarpment. So, they all back-spoored in circles, upwind and downwind, following where he had fed, the spoor getting fresher and fresher until they came to where he had recently drunk.

The wind being wrong, they then left the spoor and doubled back on their own tracks, cutting in again toward the Rift wall, about half a mile from where the elephant had drunk.

Suddenly a herd of buffalo smashed through the bush to the left and the right of them. For a moment these impulsive beasts completely encircled them.

As they moved further into the forest, a leopard leaped from a tree, darting across their path, into the bush. There was not a man among the group that did

not want to shoot, but they dared not do so while tracking elephant.

The Chief told me later that to watch Captain Hewlett was like watching a detective work out his clue. There was not a speck of evidence that the Captain did not examine: the age of the spoor, as shown by the configuration of the foot-print and the markings of the foot-print itself; when the grass was last trodden as evidenced by its dryness; when this tree was scraped against; when that branch was broken; whether or not any of these happenings showed that old Tembo suspected they were following him. If he were suspicious of them, Captain Hewlett said, he would not rip bark from the trees or break off branches, but instead would browse noiselessly as he moved along.

Captain Hewlett felt that the elephant was suspicious of them as he not only always kept downwind but was continually going deeper into the forest where his tracks would finally mingle with those of the buffalo.

Once, while penetrating deep bush, they disturbed a huge buffalo which, just in time, changed his mind about coming in their direction. A little further on, suddenly they heard the arresting and unmistakable rumbling of the elephant's intestines. Captain Hewlett

sent a native tracker to locate the exact position. Captain Hewlett and the Chief sat down; one of the boys climbed a tree to watch.

Shortly, he saw the barefoot tracker hurriedly returning. Old Tembo was located. With rifles loaded and safety catches off, the men tiptoed cautiously through the head-high thick bush, Captain Hewlett constantly testing the wind by dusting ashes from his little bag. Across a dry river-bed, through heavy forest, over big logs, they made their way until at last, standing at right angles to them, his great gray head facing the stream, in bush that was up to his shoulder in height, busily tearing off the bark from a giant tree, was Tembo. He had just come down a precipitously steep dirt bank from the Rift wall, breaking a tree as his foot slipped, and was on his way to cross the dry river-bed not more than fifteen feet beyond. When the Chief and Captain Hewlett first spied him, it was like looking at the top of a black wall, as neither the hind quarters nor the head of the elephant was exposed.

On tiptoes, not daring even to whisper, they crept to within about thirty yards of the big pachyderm—a long distance for a finishing shot, but the elephant was in too thick cover to run the risk of losing him. Even from this distance the entire elephant could not be seen, so thick was the bush, but the top of the side of

the elephant and the top of the shoulder were clearly exposed.

For days there had been discussion as to how to kill the elephant. The two fatal shots of an elephant are the brain shot and the heart shot, but as we are collecting the brain and the heart, it was necessary to find some other shot. As the .465 and .470 guns have an impact of 5,000 pounds at the muzzle, the Chief felt that four or five shots in quick succession in the region of the big nerves in the shoulder should kill by shock alone—and they did.

The Chief shot twice in the shoulder in quick succession. The animal had no suspicion of the presence of the men. He never caught their wind. Slowly he staggered down the low embankment to the riverbed. He was fatally wounded, but lest he make the other bank and fall in thick bush, Captain Hewlett gave one more shoulder shot, while the Chief reloaded. The elephant attempted to make the other bank, stumbling half up it, then decided it was no use and stepped down again, falling on his weakened side into the sandy bed of the stream. To make sure, the Chief put in one more shot.

From beginning to end, it lasted only a couple of minutes, and from beginning to end, the elephant did not move twice his own length. In majesty and dignity

the great beast made his exit. It was as if he had matched wits against those of Captain Hewlett and had accepted with resignation his defeat.

Mr. Fuller, who has had wide experience in the preparation of the skins of wild animals, said he had never handled a skin that seemed so resistant to cutting as the skin of the elephant. It was nearly $1\frac{1}{2}$ inches thick, and pure white except for its outer layer. Unlike the skin of the rhino, in fact unlike the skins of all the other animals that we have collected, the elephant's skin harbored no mudus.

Separating the bones was excessively hard work. The soft, pinkish marrow flowed as the bones were severed, and so adherent was the flesh to the bone that it was necessary to chop it away. The task of detaching the great head from the body was so difficult that Mr. Fuller could not complete it in one day.

The Chief and Dr. Quiring cut a window in the side of the elephant by removing a large section of the ribs. This gave them a chance to study and get at the organs, as they could stand literally inside the animal. The great intestines, enormous fan-shaped lobes, knee-high and $2\frac{1}{2}$ to 3 feet wide, most exquisitely marked in the arterial and venous tracery, bulged from the great belly and spread over the white sands. Standing on them, wading in the midst of them, the Chief and

Dr. Quiring worked. With flashing pangas the native boys cleared a small space of bush so that I could spread, unhindered, my yards of gauze on the green grass. The elephant specimens are heavy, and it takes three and four thicknesses of gauze to hold them in their bags. On hands and knees I worked, spreading, rolling, wrapping, tying.

The intestines and stomach were weighed in sections. All that the native boys could carry at a time was placed in a burlap bag and weighed, the entire weight of the stomach and intestines amounting to 2,034 pounds.

This elephant is an adult bull, and Captain Hewlett feels that it is 80 to 100 years old. The ivory is beautiful and in no way damaged. The eye is small, in actual weight not exceeding the weight of the eye of our zebra or of our ostrich, although it is four times heavier than the eye of the rhino and more than twice as heavy as the eye of the hippo. Undoubtedly, the olfactory and hearing lobes of the brain of the elephant will be best developed.

All the morning, all the afternoon, and until eight o'clock in the evening, we worked, yet the carcass, the head, and much of the flesh has not been weighed. So we decided to leave five or six of the native boys in the jungle, beside our Tembo, for the night. They have

posho (native rations) and a tent, and have gathered plenty of wood for bonfires.

As I sit here waiting, my task done, my eyes follow the line of native boys as they wend their way, singing, through the shadows, up the river-bed, with their fantastic burdens. A heart that is $4\frac{1}{2}$ feet in circumference and weighs $57\frac{1}{2}$ pounds, the weight of an average eight-year old child; kidneys that tipped the scales at 40 pounds; lungs weighing 306 pounds; a 235-pound liver, enough for 1,000 breakfasts; and $88\frac{1}{2}$ pounds of genitalia.

In single file, by the fitful light of two lanterns—first a boy with a lantern, second, Captain Hewlett with his big gun, I third, the Chief fourth, then another set-up of lantern, gun, etc.—we too wound our way back through the black forest, the native boys singing at the tops of their voices, as they always do when in the bush after dark.

At one of the karongas our Ford stuck. We were up to our hubs in mud.

“All hands out.” Soon a rope was attached to the other car, but not an inch did the Ford budge. There was nothing to do but lift the car out of the mud and up onto the ridge of the deep track, and with gay singing and heaving, out there in the black night, it was done by the native boys.

As we motored along, our lights picked up the eyes that shone like will-o'-the-wisps, of hundreds of game—impalas, zebras, kongonis. Once the boys got out to catch a baby impala that lingered too long, as if hypnotized by the light, but just as they reached for it over a high bush it leaped and escaped into the night. As we neared the camp, we flashed the eyes of dozens of baboons and monkeys in the trees, and also the big eyes of tiny lemurs shining like balls of red fire as these active little night monkeys darted here and there among the branches of the trees near the kitchen huts.

MAJI MOTO CAMP

DECEMBER 27, 1935

THIS morning we were up early, ready to finish Tembo. Low fluffy clouds rolled up over the escarpment and the grass was wet with dew as again, in single file, we resumed our march through the bush.

The native boys were there separating the enormous head from the body. The head weighed 1,135 pounds. The skin alone from the head weighed 510 pounds.

The salivary glands were enormous. They weighed 18 pounds and each gland measured 12 inches in length, 10 inches in width, and 4 to 6 inches in thickness.

We had read and heard that when water is not at hand, elephants when hot are able to draw fluid from their throats and squirt it over themselves. From the nature of the fluid, it is supposed to be a salivary or digestive juice. We searched for a storage space for such a supply, but, aside from the enormous salivary glands, could find nothing to account for such a procedure.

The brain of an elephant is the largest known brain of a terrestrial animal. It is tucked away in a bony fortress, the only gates being the tiny openings of the ears and the eyes, making a stone mason's task for Dr. Quiring! Fortunately, Dr. Quiring picked up on the veldt the bleached skull of an old elephant which made extricating the brain of our elephant much easier. In spite of that, it has taken him all day to dissect out the brain, which weighed 5,712.36 grams, or a little over 12 pounds—about four times the weight of the human brain.

This last figure brings the total weight of the elephant to 14,640.53 pounds. This represents 176 different sections, each section being as many pounds as four or five native boys could lift to the scales. Of this

weight, over half a ton was skeleton; over half a ton was the weight of the four legs, from the knees down; over a ton was skin, and over a ton was stomach and intestines. Yet, according to our theory, but a few thousand grams of nerve tissue, that is, the brain and the adrenal-sympathetic system with the thyroid gland run this great mechanism.

While we were working, Captain Hewlett scouted the high bank of the karonga, bringing back a weaver-bird's nest hanging on a single thread from the tip of the branch of a thorn tree. Woven into it were plume-like reed tops, and in it was a single turquoise-blue egg.

The enormous skull of the elephant was finally mounted on a living pedestal of black humanity. Slowly, huddled closely together, ten native boys bore it to the lorry. It now lies just outside our hut, having pulled the scales at 625 pounds.

On the way home, we battled locusts, as thick as rain in the air. They stuck to our helmets like snowflakes. The storks were so engrossed in catching these insects that we often had to stop the car lest we run over them.

Watching these storks land, take off and "taxi" along the ground, is a never-ending delight. Their technique is so exactly like that of an airplane, one almost listens for the whirr of the engines.

Just at sundown, Mr. Cooper brought in a hyrax—a

small, rat-like animal which never ceases screeching at night and which, for some strange reason, through its dentition, its feet, and the thickness of its skin, is related to the elephant.

Dinner is becoming a time to exchange elephant stories. Tonight we were all huddled at one end of the table to hear Captain Hewlett discuss elephant behavior. He states that elephants aid each other when wounded. By means of their shoulders and bent trunks, two elephants, one on either side of a fallen comrade, will half carry a wounded elephant into the bush, and when the cow elephant is about to calve, it is said she comes out from the forest into the open, where she is surrounded by the cows and the mtotos who form a great circle about her, while the males stand guard at the edge of the forest. After the mtoto is born, the cows assist the mother and the new mtoto back to the forest.

The Chief told of a grass and bush fire near a neighboring shamba which drove out some of the elephants from the forest above, one coming so near that the owner of the shamba shot him. The elephant fell. Being too late to cut out the tusks, the owner, in order to identify the ivory as his, cut off the elephant's tail. The native boys were about to skin the elephant when up it jumped, and with a rush was off, bowling over and injuring several of the natives quite badly. Everyone gave

chase but so far as the Chief learned, the elephant was still going, minus a tail.

In looking over Rowland Ward's *Records of Big Game* tonight, we find that the Chief's elephant is in the high record class, so far as height, length, and circumference of foot are concerned. The only entire weight that Rowland Ward quotes is four tons for Jumbo, an Indian elephant; so we undoubtedly have also made a record by actually weighing an elephant in the field.

In order to gain some comprehension of 14,640 pounds, I added together the weight of twenty of our heaviest mammals, fifteen smaller mammals, and fifteen of our heaviest game birds, and found that I could still add to the bag the weight of our entire group of seven, and ten of our native boys, before I could tip the scales at the weight of our elephant.

MAJI MOTO CAMP

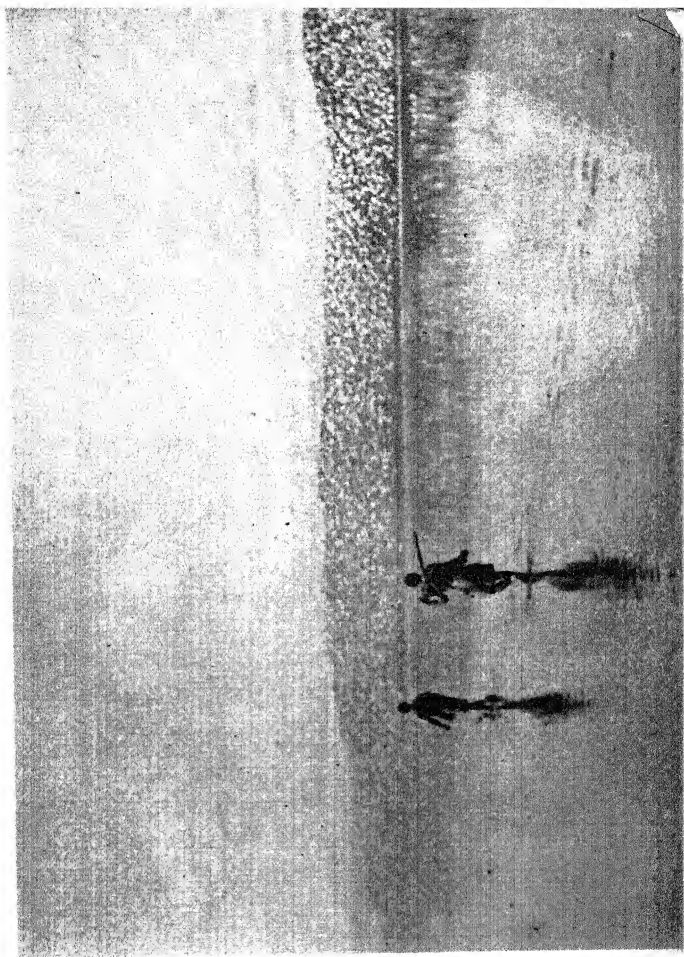
DECEMBER 28, 1935

THE impalas are coming right into camp. At sunrise this morning, I saw them behind our laboratory—lovely, leaping things, their glossy, red coats

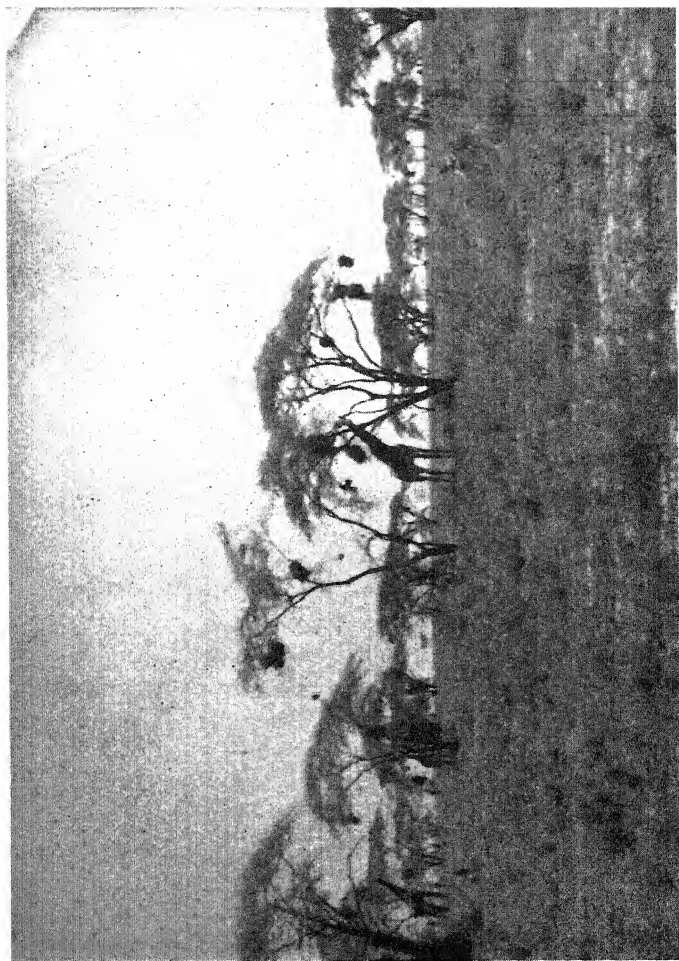
and lyre-like horns gleaming in the early morning light. Perhaps they are coming nearer to us for protection against the leopards, the lions, and the wild-dogs.

Of all the enemies of the antelopes, the wild-dogs are the worst. Like wolves, they run in packs. From a herd, they single out one animal and pursue it relentlessly until they overtake it and pull it down. In a short run, the impala, particularly, can outdistance the hunting-dogs. Its slender legs and powerful thigh muscles enable it to make a quick get-away in long, stiff-legged, twenty-foot bounds, right over the tops of high bush and scrub. The impala is geared for quick escape. Wild-dogs have no such high-gear mechanism. They are adapted for the endurance chase, adapted for exhausting their prey.

A group of Mbulus were dancing in our own little native village of three or four huts tonight. Their singing was so musical that we asked them to come over and dance in our firelight. It was cold and they were all wound in squares of cloth, and their dancing made them look like a lot of tall candles on springs. This simple rhythm and strenuous exercise they continued long into the night, and when the Chief and I turned in, we snoozed off to the weird beating of their drums.



BATTALIONS OF
FLAMINGOES
*Rose from the
Lake, Forming
a Solid Mass of
Pink Against
the Rift Wall*
PHOTOGRAPH BY
BRYAN COOPER



GIRAFFES
*Feeding on
Mimosa Trees*
PHOTOGRAPH BY
ARTHUR B. FULLER

MAJI MOTO CAMP

DECEMBER 29, 1935

A Square of Cloth

I WAKENED early this morning, hearing singing near our hut. When I looked out, I saw the Mbulus. Some of them had stayed on and they were clearing the compound of grass and weeds in order to keep at a minimum the insects, snakes, and scorpions.

Long before the English and Japanese looms made a square of cloth economically possible to the native, the hide of an animal served as his square. But now the goal of every native that labors is a square of cloth. In the hands of civilization a square of cloth is not so versatile. It may serve as a tablecloth, as a bit of decoration, or as a shawl, but in the hands of the native it becomes his worldly goods.

Usually of beautiful cinnamon hue, the square of cloth, thrown over one shoulder and tied under the other, shields from wind or rain or sun. When working, with infinite deftness, without pin or tie, it is suddenly transformed into a skirt or a pair of shorts. When

the sun's rays beat down too fiercely, by magic it becomes a high turban; when dust storms swirl, it snugly hoods the entire head and figure, and at night, tucked tightly, it becomes a winding sheet to shield from cold. I have seen babies slung in it, dishes wiped with it, food or wood carried in it. I know of nothing so utilitarian as a native's square of cloth.

Young banana and pawpaw trees have been planted about the compound recently, but in order to keep them green, it was necessary to encircle them with net, as otherwise the goats would eat all the leaves. Today, while working in the laboratory, my attention was called to the fact that the goats had climbed the stairs of our hut and when I dashed over to chase them away, I found the Chief's papers scattered to the right and left. The goats were investigating the edibility of his latest manuscript.

MAJI MOTO CAMP

DECEMBER 30, 1935

EARLY this morning, the Chief, Captain Hewlett, and I left for the marshes to collect some birds for Mr. Fuller's Lake Manyara Group. We motored over

the smooth sands as far as we could, and then tramped through the high reeds and marsh until we reached little clearings—small ponds—on which hundreds of various species of birds floated.

We all wished we had elephant feet. They contract and expand as needed. Elephants apparently have no difficulty in manoeuvring in a marsh, while we found ourselves in imminent danger of losing not only our shoes, but our legs as well, in the giant elephant spoor.

Ducks of every variety were in these little ponds, Egyptian geese and beautiful white egrets, while far out in the lake was a wide ribbon of pink—thousands of flamingoes—which as we watched, slowly took wing, rising, higher and higher, in a great V-shaped formation, until the sky was rosy with their wings.

Suddenly the formation turned and headed for the shore. Nearer and nearer they came, like a great pink cloud. We froze in our tracks of mud, until all about us, stretching over us, like a pink Milky Way, were thousands of flamingoes.

It recalled to the Chief and me a night we spent on the escarpment, in 1927, when from our lookout over the world, we watched the red sun emerge and finally clear itself above the towering peaks of the Great Rift Valley. As we climbed the wide elephant trails, worn deep into the sandy soil, shrubs, ablaze in color, waved

in the early morning light. At the top of a little kopje, we turned aside, Mr. Ulyate leading us to a never-to-be-forgotten sight.

There it lay before us—an emerald lake, sunk deep in the bosom of an ancient volcano, whose sides were green to the water's edge with primeval forests. It seemed the very edge of the world. It was like a leap into the blue.

Fifteen hundred feet above this enormous crater, we stood, looking down on its still green surface, and curling at its edge, floating serenely, was a mass of pink, a solid mass of life—hundreds, thousands, could it be millions of flamingoes? There was not a ripple. There was not a sound.

Suddenly our rifle shot echoed and re-echoed, awakening deep-toned reverberations that must have slept for hundreds of years. With a slow, undulating motion, the entire surface of the lake began to move. The streak of curling pink at the side was spreading. Our glasses revealed birds actually on the wing though, to us, so high above, they seemed still to be floating on the surface of the water.

We stood enthralled. This emerald lake, a mile wide, two miles long—who knows how deep—embosomed fifteen hundred feet below in this ancient crater, snowy Kilimanjaro, silvery Oldonyo-lengai,

Kitumbiene, Meru, all serving as guard of these secret fastnesses. It was a scene of enchantment.

As the Chief and I watched these thousands of flamingoes this morning, we could not but wonder if they had cleared those towering peaks to find new hunting grounds, for there in front of us stood the ring of ancient craters.

In the afternoon Captain Hewlett brought in a ground-hornbill. To our surprise, the natives shook their heads. They did not want to touch it. Ali kept repeating something ominously which Jonah finally interpreted as "very bad luck."

Ugly it was, but mere ugliness is not apt to breed such superstition. It may originate in the fact that when the female incubates her eggs, the male walls her up; therefore, it would be bad luck to kill the male as the female might perish. As a matter of fact, however, observers have noted that when the male does not come back, the neighborhood takes on the rearing of the family.

Be that as it may, this evil-looking ground-hornbill was a wonderful bit of color for the Lake Manyara Bird Group. Mr. Fuller was so amazed at the red and blue and purple coloring of the naked portions about the eyes and throat, that he made a portrait of the bird's head and beak.

MAJI MOTO CAMP

DECEMBER 31, 1935

WE left early in the morning for Ngaruka, almost running over impala as we left our compound. The impala are coming nearer and nearer to camp. In the early morning I see them from my hut. They seem utterly unafraid.

As we moved along we saw many ant-hills, and hundreds of storks—old marabouts, almost resentful of our intrusion, and snappy little European storks. We were early enough to see them, still perched on the dead tree-tops where they so artistically silhouette themselves against the sky. We passed many trees filled with the long pendulous nests of the weaver-bird, and others in which were swung hollow logs placed there by natives to entice the bees.

It was fun to see the Kitete Plains again. They are the Africa that I remember—dry, arid, full of funny little black volcanic rocks; no forest, no lush, tall grass, no high bush such as the country we have seen this

time. In fact, the Maji Moto trail seems to act as a great divide. On one side of the Maji Moto trail—our side—a thick forest hugs the base of the escarpment and is the home of hundreds of buffalo, rhino, elephant; while, on the other side, the arid plain sweeps right to the base of the rocky escarpment, which gradually becomes covered with forest as it towers into the clouds. Captain Hewlett says the reason the elephant, buffalo, and rhino, but particularly the elephant, frequent the forest at the base of the escarpment, is because there the wind is always in their favor.

As we moved further into the plain, we saw herds of oryx, beautiful blue eland, Tommies, whose chops are so famous, grazing zebra, beautiful Grants, and many giraffes. One giraffe family walked over to see the make of our car! The big bull, after a glance our way, continued to pluck mimosa leaves with his long prehensile tongue, but the female showed great curiosity. She came nearer and nearer, and the youngster, like a young adolescent, ran around in circles, occasionally indulging in antics as if to show what a fellow he really was.

Gradually the familiar wall of the escarpment came into view. When we were in Ngaruka, in 1927, there was no Ngaruka. There were only two fig trees bending low over a babbling brook, in and out of which mon-

keys continually played. Now a native village makes a long approach to the two large fig trees.

We passed fields of maize, of bananas, of pawpaws, and many little irrigation canals, as the natives have learned that irrigating brings results. We saw a number of Masai, wearing their strange hide clothing and smelling so like a barnyard, even as we passed them, that we wondered how they could endure themselves.

The young women now wear colored beads with their steel- and copper-wire jewelry, which gives them a more barbaric appearance than ever.

We saw natives outside their huts helping each other pick off unfriendly ticks—not so far removed from the monkeys who are helpful to each other in these little courtesies.

The native children intrigued me. They were utterly naked and were playing much as our children play. We saw them shooting tiny bows and arrows, attacking each other with small spears and shields, and mothering strange-looking dolls made of the fruit of the sausage tree. They were building in the sand. They were collecting stones and shells. They were quarreling and chasing each other, as children do all over the world.

At Ngaruka a native had caught a python for us; so

after lunching under the fig trees, we sought out the python charmer and, after opening the wooden box, quickly sealed it again lest the twelve feet or more of python get a start out!

During the day we saw many Masai cattle. They were tended by young Masai. Usually two of these young shepherds tend each herd. The only weapons these lads carry are their spears. Their duty is to find good grazing by day for their cattle and to drive them back to the manyattas at night where they are herded in the center of the circle of cow-dung huts.

The Masai cattle are rugged and handsome. They have long horns, humped backs, and look well fed. Seeing them today reminded the Chief and me of the time we stopped to watch two Masai bulls finish a fight which we later learned had been going on for hours. A large black bull and a large white bull were contending for leadership of the herd, while two Masai herdsman, each with his spear, stood on a high ant-hill, awaiting the result. For ten minutes at a time, the bulls stood snorting, brow against brow, horns interlocked, until finally one or the other gave a rush. For a time it seemed an even game. Then the black bull took the white one unawares and rushed him down the hill at least a thousand feet or more. At that they parted, each

going his own way, but the black one went toward the herd.

On our way home we stopped at a Masai manyatta. All of the warriors but one were away. Undoubtedly the one at home was the chaperon, for we no sooner stopped than he, spear in hand, came out to inquire as to our wants.

In no time, from every hut poured forth women, women with babies on their backs, young women, and children. Women of twenty-five looked forty-five.

After much haggling, we obtained the consent of the chaperon to take some pictures of the women. The difficulty seemed to be that the chief of the tribe was away tending his herds. A few baksheesh, however, won the day and at once they started to swarm upon us like flies. Dr. Quiring offered some of them a cigarette, but Masai women have not adopted smoking. However, they dug right into his pocket after matches!

On the way back we thought it best to pay our respects to the Masai Chief whom we passed, as he was tending his herds of goats, cattle, and donkeys. He was perhaps forty-five years old, a nice-looking, well-built man with short, stubby, curly beard, and one injured eye. All of those women were his! That was a single manyatta, made up of his various families. No wonder he went out to tend the herds!

We asked if he could arrange a dance. The difficulty was to make him understand about the time. He could understand "tomorrow," but "day after tomorrow," even in Swahili, was too much of a mathematical problem for him. It was left, however, that he would kill a bullock. After that, the young warriors of the manyatta would indulge in a gorge, and when in a sort of sodden state from the gorge, they would dance; so it is up to us to keep in touch and see how the preparatory feast is going.

Formerly, the Masai were a war-like tribe. Raiding was their occupation. They spent their lives stealing cattle and women and better grazing lands. In order to protect other tribes, the British Government finally set apart land for the Masai in the highlands of the Rift Valley. Within this area the British allowed no European settlements, and owing to the reputation of the Masai, other tribes gave them a wide berth. Now that the chiefs and the young warriors are no longer allowed to raid, they have nothing to do but herd cattle.

The Masai are not agricultural. They do not hunt. They live on milk mixed with blood; chemically speaking, a most perfect diet. They bleed their cattle regularly. Pulling the skin taut, they distend the jugular vein by means of a tourniquet. With an arrow,

which has a guard an inch or so from the point, they shoot into the jugular vein. The blood gushes forth and is caught in a bellied hide. When the tourniquet is released, the wound closes.

At about eighteen, the young Masai quits herding, is circumcised, has an orgy of blood drinking, and is pronounced a warrior. The various circumcision ceremonies are a means of classifying these warriors. Each class goes off by itself and establishes a manyatta of its own. They take with them young unmarried girls, with whom they live in companionate marriage until they can afford to exchange cattle and goats for wives.

It is the Masai women who do all the work. The women build and repair the houses and cut and build the boma or thorn hedge that surrounds the little circle of a dozen or more cow-dung huts. These huts of the Masai are low. I doubt if a man could stand upright in one. They have no windows and only occasionally do they have a chimney. Entering one of these huts is like entering a snail shell. To pass through the low door, one must bend double, then closely hugging the wall, gradually the winding way leads to the center of the hut.

In Africa the struggle between naked man and beast still exists. Living almost as do the wild and powerful animals, the African native makes use of every animal

means he possesses for securing his survival. They band together and spear the lion that carries off their cattle; they trick the great elephant into pits; they entice the bees into hollow logs.

The African native lives as unprotected a life as do any of his fellow animals. His feet are less fleet, his hands less strong, his eyes less adapted to penetrating the dark; his ears are not so attuned to sound, and his sense of smell is less acute than that of the animals about him. Toothless, by comparison with his enemies, multiplying by a slower process, and with his young helpless for many years, the African native lives in this cut-throat company, his only superiority to the animals about him being his brain, through which, by foul means or fair, he achieves his survival.

As we motored along, a grove of beautiful euphorbia trees gave Mr. Fuller a wonderful opportunity for photographs. Their stately leaves branch out like the arms of giant candelabra, and in the shadows of the late afternoon they seemed part of a religious rite.

As we walked over the plains, there was not an odor, nor a bit of carrion, nor did we see lizards, mice, toads, or worms; yet upon these plains countless deaths occur, and these plains abound with every kind of insect, worm, lizard, and reptile.

The marabou storks, the ostriches, in twos and

threes, the dignified secretary birds with their armoured legs, the greater and lesser bustards, and even the beautiful crowned cranes were parading the plains as we sped on. All these birds walked in stately deliberation; if in pairs, at certain distances from each other, searching every tuft of grass, scanning every nook and cranny. These are not pursuit birds. They take what they can pick up without pursuit. They must be the sanitary police!

On our way back to camp, we stopped to collect two greater bustards for Mr. Fuller's Lake Manyara Group. Enormous creatures they are. They weigh from 25 to 30 pounds. They stand about 4 feet in height, and, with wings outspread, measure from 9 to 10 feet. It is the greater bustard that makes such a fine showing during the breeding season. He can almost turn his grayish-brown feathers inside out, displaying a fluffy coat of purest white, and he can so inflate his great pouch and chest, that his whiskers turn upside down. He is a very impressive male.

As we finished dinner, we heard a whirring of thousands of wings, commingled with eerie, cackling sounds, coming out of the night. It was all about us—overhead, and on all sides of us. It was the flight of thousands of pink-winged flamingoes. As we peered into the heavens, nothing could be seen save the black

shadow of an occasional bird as it crossed the halo of the moon. For hours after we turned into our little hut we heard them and thought that, of course, the rosy-pink band at the far edge of the lake, for which we had become accustomed to look at dawn and sunrise, would be gone in the morning.

MAJI MOTO CAMP

NEW YEAR'S DAY, 1936

IMMEDIATELY after breakfast we delegated Bwana Cooper, who is handy with snakes, to take the python from its cover. With gauntlets, he seized its head, keeping its tail from getting a fastening hold, while Mr. Fuller took some movies of it on the ground before we preserved it for our collection.

Later this morning, while Mr. Cooper's baby monkey was following him about, suddenly the little half-wild gray monkeys—two babies and a male and female—that live in the trees near the camp, spied it, set up a great chattering, and lightning-like, the female bolted down the tree, grabbed Mr. Cooper's monkey

by the tail, and scolding and chattering, dashed up the tree with it.

Mr. Cooper, most annoyed, charged up the tree after it. Higher and higher he climbed, even out on a swaying limb. The mother monkey scolded and spat at him, but the baby monkey bleated and wanted to come to him. He finally snatched it from the mother monkey, shinnied down the tree with it, and carried it into his room.

Before Mr. Cooper realized what had happened, the mother monkey was back, had seized the baby monkey again, and was off with it; but Mr. Cooper rescued it before they reached the tree. After this the baby monkey clung frantically to Mr. Cooper's big boots and refused to be separated from them.

The tusks were pulled from our big elephant skull this morning. In order to extract tusks easily, one has to "let them lay" for a few days until they ripen; four or five boys can then pull them out with considerable tugging. The tusks extended way up into the nasal cavity. All sorts of bets had been made on their weight and length. They tipped the scales at 41 and 44 pounds and measured 67 inches along the outer curve—good tusks for a Masai elephant in this district. Congo and Uganda elephants have heavier ivory.

The tusks of an elephant, I understand, are really



WEAVER-BIRDS' NESTS

PHOTOGRAPH BY ARTHUR B. FULLER



MASAI WOMEN



MASAI WARRIORS

PHOTOGRAPH BY
ARTHUR B. FULLER

ancient teeth gone wild. Each tusk, like a tooth, contains a nerve. When Dr. Quiring extracted the nerves from the tusks, they were found to be 18 inches long, 4 inches wide at the base, and tapered to a point. An elephant has no front teeth. Instead, it has molars on either side of the lower and upper jaw; but they are all grown together into one solid mass.

Mr. Fuller is still preparing the skin of the elephant head. He has spent four days whittling it down. The ground all about him is white with soap-like shavings. By most intricate dissection, he removed the cartilages from the ears. They were $11\frac{1}{2}$ inches thick, tapering to the outer margins, and were as large as the ears themselves, that is, 3 feet, 11 inches, by 5 feet, 10 inches. Set up as a flat-topped table, each ear would seat twelve persons.

This morning two native boys sawed for at least three hours in order to cut in half the old bleached elephant skull, that Dr. Quiring picked up on the veldt, as Dr. Quiring and the Chief wanted to study the brain pocket. To everyone's surprise, the skull of an elephant is made up largely of air cells, the configuration of which, on cross section, is of most delicate and beautiful design, reminding all of us of the stone tracery in cathedral windows. (See Illus. Page 145.)

Our four elephant feet are cleaned, stuffed with

straw, and ready for packing. Each hind foot has three large toe-nails, and each front foot has four nails. The foot of an elephant is really amazing in its structure. The toes are all enclosed in a great pad of skin, the center of which is filled with springy fat. This makes of the foot a soft cushion which gives and takes, adapting itself to every kind of pressure that is put upon it. It must be this elastic quality of the foot that makes the tread of the elephant so noiseless.

All of the rest of the day we were rushed with "ticky" beasts and birds.

In all of our dissections, Dr. Quiring and the Chief search for gall stones; but, if one were to judge from our findings, gall bladder disease would be the special privilege of man.

We began in the laboratory at seven o'clock this morning and were still working at eight-thirty this evening, having had only short stops for lunch and tea. Our cards jumped fourteen in number. Were it not for our cards, I should never know the date. A bath at nine—and with plenty of ammonia in it too—before a nine-thirty dinner, was most welcome.

Tonight our camp is "high." A stiff breeze is blowing, and the elephant head is obvious. Happy natives, however, surround the flickering fires in the compound, each with his stick, on which is some precious

tidbit, and the cooking quarters look like wash-day. Every bush is hung with livers, hearts, and tongues, bits of fat, and kidneys.

MAJI MOTO CAMP

JANUARY 2, 1936

AS I sit here on my porch writing, I hear an arresting "whoo" in deep tones, then "whoo" perhaps five tones lower, followed by one again three tones lower, then a rapid chanting of perhaps two rhythms of eight syllables, all in the same tone, then a weird arresting call, and it is all repeated. It reminds me of full organ notes and chanting in a cathedral.

As I look up, a group of perhaps twenty Mbulu warriors are coming down the escarpment. All have spears and some have shields. They are wearing strange decorations such as feathers, tails, old hats, bits of cloth on their heads; squares of glass and tin foil on their foreheads; beads, string, wire, almost anything, around their necks and in their ears. They are dressed in their native throws; legs and one shoulder and arm are bare.

They are dancing along in a slow, bobbing motion, their glinting spears extended.

Suddenly there is a loud "Brrr" followed by a general change of position; then the whole incantation is repeated. They are our dancers—coming with their chief for the promised banana beer. In fact, they are bringing the women with them, a group of a dozen or more following at some distance. The dancing and rhythm of the women is the same as that of the warriors, but their intoning is on a higher pitch. It is still in the cool of the early morning and the women's squares are drawn tightly around their slender bodies, and even up over their heads. Unlike the Masai women, their heads are not shaven. The Mbulu woman apparently spends time on her toilet. Although the hair of all of the women is short, it is cut or plaited in strange designs or in low ridges.

Design evidently plays a part in their lives, as their cheeks and their foreheads, their chests and their breasts are cicatrized in many and varied patterns. It should at least mean heroism, if not beauty, to the courting male.

The carriage of these Mbulu women is beautiful, dignified and stately. They move almost without motion, with backs straight, buttocks drawn in, head and shoulders high.

We begged them to come into the sun and take off their outer squares. Never have I seen débutantes in a dressing-room more concerned about the hang of their skirts than were these Mbulu women. They adjusted each others' earrings and beads; they were anxious about the lengths of their skirts; they straightened the bits of glass, tin, button or foil in the middle of their foreheads, and all with a serious, dignified demeanor.

They had come for a house party, as they were to stay all night. They were to be paid and to get banana beer and posho. Their chiefs had come with them. It was a bargain. They had a duty to fulfil.

Three beautiful native girls, fifteen to eighteen years old, took their stations in the middle of the circle. Over their laps, three assistants adjusted aprons of heavy leather which they kneeled upon, then pulled taut. These were their drums.

In stirring rhythm, solemnly, and apparently tirelessly, they beat out the measures for the dance. Lest they become too warm or too cold, the assistants were constantly arranging the squares of cloth about the drummers' shoulders. Occasionally, they would bring a lighted cigarette, from which each drummer would be allowed one or two very full, very deep, utterly inhaling puffs. The assistant would then snatch it away, smoking the rest of it herself. Thus the dance went on

and on—the same technique, the same song, the same rhythm, save for a few variations, hour after hour.

We finally asked Mr. Cooper to ask the native chief what it was all about; in other words, what did the words of their song mean. He said that the women were saying that men were just like hyenas; they were always skulking about to see what women they could get, and when they got them, they were savage, like hyenas, and always wanted more. Then the men, with a wild jump into the center of the circle and a vigorous “Brrr,” would violently shake their heads, change into another position, and assure them that that was not true. And that is what they sang and danced about all day. We finally left them to beat it out, while we went about our tasks.

When it was over, we distributed safety pins, paper clips, buttons, bits of ribbon, and tiny mirrors, all of which they immediately proceeded to use as jewelry, mostly on their foreheads and in their ears and noses. Had I had extra brassieres, they would have made a great hit. A brassiere and an umbrella, or an umbrella and a skating helmet make a costume for any occasion.

In the late afternoon, Mr. Fuller, Dr. Quiring, the Chief and I went out to the shore of the lake. On the way we stopped to photograph some enormous ant-hills, the homes of the termites or large white ants

which are found all over the veldt. As we came to the baboons, they tumbled from high, safe, positions on the trees—pell-mell, one over the other—to concealment in the high grass. Although at sunset-time the great fringe of flamingoes was rose-pink in the setting sun, after dinner the birds were all on the wing again, circling about in the skies far into the night.

MAJI MOTO CAMP TO ARUSHA

JANUARY 3, 1936

FOR a last look at the game and for one more glimpse of the lovely gray and purple tones of Lake Manyara, of towering Kitumbieni, and Oldonyulengai, of the long, low-lying Manyara Hills, and the far-away Manyara Pyramids, of Hanang and the Escarpment, Mr. Fuller, Dr. Quiring, the Chief, and I were called at five-thirty, in the hope that we might take some good moving pictures of the baboons.

We bumped into zebras, actually in camp. The impalas were so unafraid that we stopped the car to let them cross the trail. We noticed one big buck limping

on his front foot, and a bit out of the herd. One could not but reflect that nothing but tragedy can be in store for him.

Yes, the baboons were still high up in the tall tree-tops, all crunched together into fluffy, furry balls, looking from a distance like bunches of mistletoe.

No sooner seen than they began to scurry, frontwards, sideways, backwards; some cautiously, some recklessly, many in great bounds; some with babies in their arms, others with babies madly clinging to them, others beating the youngsters along—all screaming, chattering, scolding, until the high grass was reached. Then silence, not a sound, nothing to be seen save one venturesome youngster that, deciding to climb higher, was left alone in the tree, when endeavoring to make some kind of an escape, it leaped from one swaying tree-top to the other, until it too was finally lost in the thickness of its high retreat.

Each night these baboons nest in these trees, and groggy neighbors they are. We often hear them in camp, and sometimes see them as they troop up to the water-hole on the escarpment.

Just as if the storks had known that I wanted to see them once again silhouetted against the pink clouds of the early dawn, perched high on the dead tree-tops,

there they were, in greater numbers than ever; and there, out beyond the marshes of the lake, was the great band of pink, the battalions of flamingoes feeding quietly, their long, curved necks turned upside down as they sucked in the dirty soda water filled with tiny crustaceans, then filtered it out again through their great beaks.

Kongoni, jackal, wildebeest—everything—was out to nod goodbye, and, as we turned about near the Hot Springs, who should pop out to see who we were but our old friend, the big bull rhino. He was curious and came right on. We waited. He evidently had been fighting, as he had a gaping red wound in his rump. He seemed a bit annoyed to be disturbed, and when we put the car in gear to be ready in case he should chase us, he was decidedly peeved. He stopped a minute, stamped about, snorted, then decided to come on. For some time he chased us. Once he was within twenty feet of the car, a distance at which Mr. Fuller could get good pictures, then just as suddenly as he took us on, he stopped, took a deep breath, and snout up, the picture of impudence, he trotted right off into the deep grass and bush as much as to say, "Oh, I know what that is, and I am not at all interested."

By this time we had nearly reached the camp and

were congratulating ourselves on the good show, when suddenly there was a pounding of feet and breaking of twigs and we found ourselves surrounded by buffaloes—a hundred or more of them—stampeding in front of us, behind us, to either side of us, as they dashed across the camp trail to the thick bush. They had actually been feeding in the long grass right behind our camp, or drinking at the water-hole behind our laboratory, when the noise of the car startled them and the whole herd broke for the bush. We stopped the car to let them pass.

After a jolly breakfast, the Chief and I finished our last bits of packing. To our personal boys, I gave a bundle of odds and ends—old khaki trousers and shirts, shoes and stockings. The boys were thrilled, but they no sooner reached the cooking hut than the cook and skinners settled down upon them like vultures, saying, “I have a wife and she wants a pair of stockings.” So, before we left, our few belongings were serving many purposes, for which they were never intended—stockings for turbans, garters for jewelry, underwear for outer garments, and safety pins for earrings.

Goodbyes were hard to say. Dr. Quiring and Mr. Fuller have been such splendid coöperative comrades

that we both long to go with them to Masindi, to see for ourselves chimpanzees in the big Budongo Forest, and share with them the lazy trip down the Nile to Cairo.

After an early lunch the Chief and I left for Arusha, where we arrived at the New Arusha Hotel, which Mr. and Mrs. Ulyate manage so efficiently, in time for tea, a bath, and a change from safari to regulation clothes. It is amazing what an inhibiting effect upon all good intentions a long tub and clear hot water have.

A messenger came to our door to say that Dr. J. H. Parry and Dr. R. C. Speirs were waiting to see the Chief about an urgent operation that they had arranged to be performed by him the next morning at the Government Hospital. I replied that the Chief knew of the appointment, was dressing, and would be ready in a few minutes. It was over forty-five minutes later that he came shuffling back. He had been sleeping in his bath!

Captain Hewlett dined with us this evening. After the food of camp, Mrs. Ulyate's freshly baked bread tasted like cake, and the fish brought down late this afternoon by airplane from Lake Victoria was all that we needed to spell feast.

The dining-room at the New Arusha Hotel is

unique. From the wainscoting to the ceiling the walls are covered with paintings of the Great Rift Valley. Not only were all the familiar peaks and lakes spread out before us, but tucked away, grazing on mimosa trees, was the very group of giraffe we always saw up near the Hot Springs, the herd of impala that lived near our camp, the crotchety old rhino that we bumped into so often, the hippos that wallowed in the papyrus swamp, the lions that we heard every night. The escarpment, the baobab trees, the Masai manyattas—all were there. It was a picture map of the entire district.

Mrs. Ulyate told me that a stranger, hungry and poorly shod, blew in one day. He needed help but had no money. He said he could paint; so Mr. Ulyate made a drawing of the Great Rift Valley, and he followed it.

Mrs. Ulyate showed me some amusing native carvings, one a crocodile swallowing a native woman, feet first, who had slipped down the beast's throat to her waist. Judging from the squirming attitude of the crocodile, it was hard work, but the expression on the woman's face depicted only resignation.

There were also delightful carvings of various wild animals, grotesquely illustrating what to the native's mind were the most dangerous attributes of the different animals. Then there were strange little black

figures, some quite terrifying in appearance, therefore devils; others pleasing, so presumably gods.

Captain Hewlett told me of a model of a biplane about three feet long that a native, after seeing his first airplane, carved from a single section of the trunk of a tree. It shows the four engines in the front, the two wings on either side, the great wheels, and carries the streamline design of the body, even to a perfect tail.

For many years Mr. Ulyate has been a professional hunter, planning and taking out safaris. He and his son, Kenyon, have recently established week-end safaris from Arusha to Lion Hill in the Serengeti Plains, where "fed lions," as many as fifteen or more at a time, may be seen and photographed on the kills.

Jack, another son, manages the Interterritorial Bus Line between Arusha and Nairobi. This is a great convenience in a country in which the train runs only twice a week, as the bus line runs regularly and takes less time than the train.

Both Mr. and Mrs. Ulyate's family trekked up from South Africa, many years ago, in covered wagons. In those days a wagon pulled by sixteen oxen was the only means of conveyance. For several years Mr. and Mrs. Ulyate lived in one of these covered wagons, hunting the plains for ostrich chicks, and fighting off lions with only tin pans and good lungs!

ARUSHA

JANUARY 4, 1936

THE Government Hospital at Arusha is a pretty, Spanish type of building. A large coffee plantation is on one side, and opposite is old Meru. As I waited outside this morning, many natives passed, mostly Masai women in their old skins. Like the giraffe and the camel, one is aware of them twenty feet or more away. Most of the women carried babies, as well as heavy loads, upon their backs or heads. The babies were tied onto their mothers in many and intricate ways—over their hips, on their backs, around their stomachs—and, as if they were not burdened enough, the arms, legs, and necks of the women were wound with telephone wire, hanging far below their breasts, and the lobes of their ears were distended with bone ornaments or wooden disks. With the Masai, wealth is measured by cattle, and the more cattle a Masai possesses, the more telephone wire his wives wear.

All sorts of arresting coiffures passed as I watched.

The Masai women shave their heads but the men have many ways of dressing their hair. Most of the Masai warriors plait it in pigtails, wearing one in front and one behind; some wear curiously shaped little bonnets made of goats' stomachs; some tie wool and string into their hair, making wigs as it were, which they plaster with oil and red mud, while some wear immense headdresses of ostrich feathers and tails.

The Masai love decoration and personal adornment. Their shields are painted in a variety of design, and both men and women wear earrings and bracelets and necklaces.

One young Masai warrior I watched walk down the road, his straight muscular side and limb showing each time he stepped. He was marvelously developed, not an ounce of fat, the long muscle of the leg playing gracefully at each step, just like that of the antelopes we have been so constantly studying. These natives seem no more naked than does an antelope, and they are just as beautifully formed.

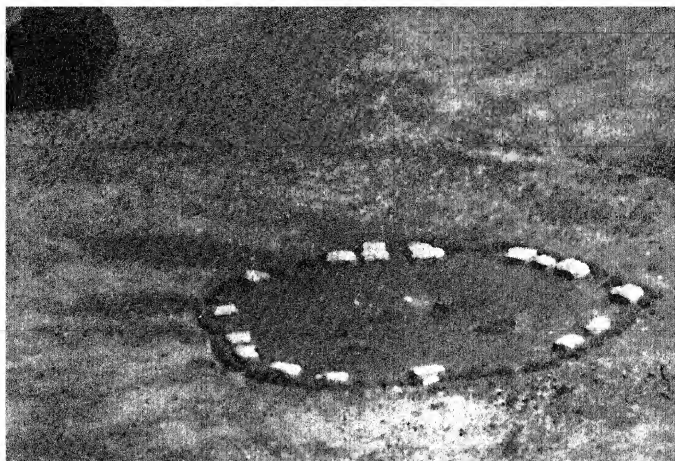
This fact of no fat interests me. In our dissections a small amount of fat was found about certain organs. This, however, was more apt to be seen among the carnivora than the herbivora. The elephant showed only 26 pounds of fat. One never sees a fat native. Neither does one see scrawny natives. A young Masai

warrior is as perfect a specimen of his kind as is a young lion of its kind. The young warrior bleeds his cattle and mixes the blood with sour milk for his food. The lion kills his food, getting the same chemical units. It really is as logical for the native to take the blood which the animal makes as the milk.

ARUSHA TO MOSHI

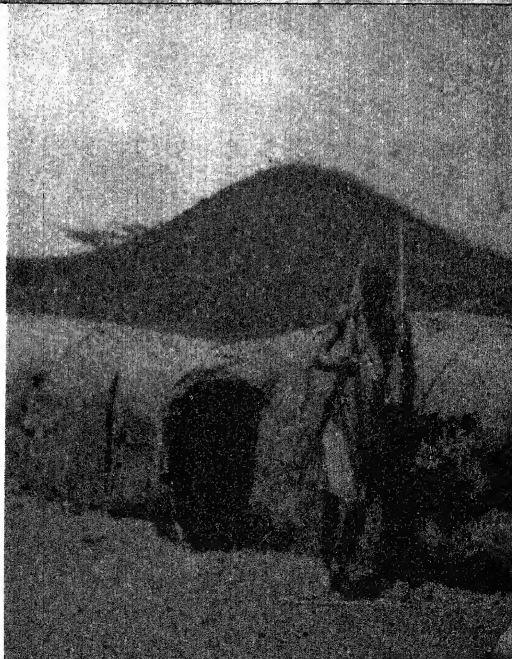
JANUARY 5, 1936

CAPTAIN HEWLETT called for us at nine. After a short stop at the hospital we were off for Moshi, seeing plenty of game on the way, and stopping at the Two Bridges Inn, near Moshi, for lunch. This is a most successful and attractive inn, run by Mrs. Stevens, who, however, feels that the estate is rather too much of a care for her alone, and at once sought out the Chief and me, actually wondering if we might not like to buy it, as she knew that "Americans often have two or three homes." Orange and lemon trees, grapefruit trees and pawpaws, the most fragrant flowering bushes, beautiful stretches of lawn, and a

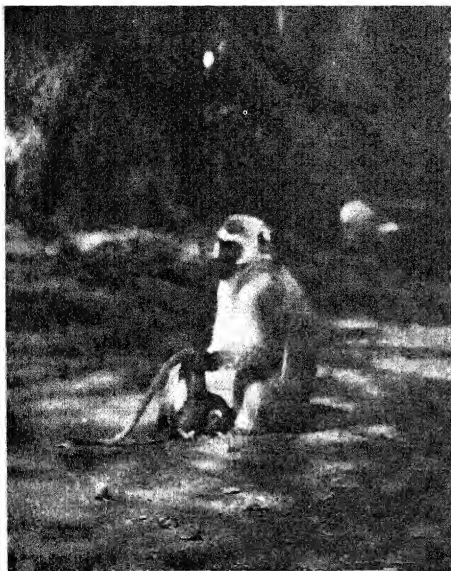


MASAI
MANYATTA *in*
Ngorongoro
Crater

PHOTOGRAPH BY
ARTHUR B. FULLER



Entrance to a
MASAI HUT



The Kidnaping of
OUR PET MONKEY
PHOTOGRAPH BY
ARTHUR B. FULLER



SAFE, AT LAST
PHOTOGRAPH BY
ARTHUR B. FULLER

full view of snowcapped Kilimanjaro would be a real lure to a long purse.

In Moshi we stopped at Captain Hewlett's house to see some of his heads. Fortunately he has them beautifully mounted on a screened porch, for, although he had told us that his native boy was at the house and had most generously suggested that if the plane were late, we would be more comfortable at his house than at the hotel, when we arrived the house was shut tight as a drum, and the boy was off with the key—the only key.

The white men out here in British East Africa have the same sort of helpless confidence in the natives that our southerners have in the negroes. Apparently, the naïveté and willingness of the native to do all things gets under the white man's skin, and not only makes him dependent on the native, but gives him a pseudo-confidence in him. He knows that when he turns the key and leaves his all to his native boy, he may return to a house emptied of everything that is desirable. Perhaps it is just the pseudo-confidence in the native that makes the English such masters in governing them.

The plane was expected at five, and besides seeing the heads, we were to see a baby elephant and Captain and Mrs. Hewlett's baby daughter, "Jo," who was

staying with her grandparents, Mr. and Mrs. Dick, while Mrs. Hewlett was out of town.

Mr. and Mrs. Dick are Scotch. They came out to Tanganyika seven years ago to take up the lumber business, and Mrs. Dick's parents, seventy-six and eighty-one years old, joined them a year ago. They live in a charming little group of whitewashed adobe houses, with colored cement floors, large, open, grilled windows, and a plaited straw roof, set three or four inches clear of the walls—quite the prettiest little settlement of guest-houses I have seen. Like the native houses, they are all round, and a round house lends itself most enchantingly to arrangement. An air-space of six or more inches between the wall and sloping thatch roof always keeps the house cool. A pretty bit of iron grating over the screened window keeps out wild animals as well as natives, yet always admits the air.

The floor of mud is pounded into an almost solid concrete and is covered with rugs. The ceiling is charmingly interwoven or braided with wide banana leaves. The mud walls are plastered in a soft buff, a pretty background for pictures.

One such house serves as a living-room, another as a dining-room, another as a bath-room, and there are several sleeping-huts. To avoid the brilliant sunshine

and the ever-present need of finding one's hat, the huts are connected by little arcades or archways, covered with flowering vines. Police dogs, lap-dogs, monkeys, roam around as household pets. Who would not be happy in such an environment?

As the plane was expected about five, we had to hurry on. I was sorry to see the pretty teapot tucked away in its gay cozy and to leave the delicious Scotch "bun" and good company, but we did not want to miss seeing the baby elephant.

The Elephant Mtoto

The elephant mtoto was in a little yard by itself. It was only a few weeks old and was 2½ to 3 feet tall. With almost trembling caution it placed its foot before taking a step. It knew the native boy and rather blindly followed him about, turning its sensitive trunk this way and that, sniffing him all over as if expecting to abstract food. It was a dignified little beast, and grave. It showed no fright, but seemed to be yearning for something.

The skin of the elephant mtoto was loose and wrinkled-looking. It was a light slate-gray in color, and was covered thinly with quite stiff hairs about 4 inches long—the sign of its ancient phylogeny. It drank with

its mouth, not its trunk which seemed short and not particularly flexible, although the two sensitive little finger-like processes from the trunk reminded me of antennae forever quivering and reaching for something. Captain Hewlett says an elephant's trunk is short and stunted-looking when the elephant is born.

Just as the long hairs that the baby elephant bears when it is born carry the history of its evolution from a hairy species to a hairless species, so in the growth of the trunk of each individual elephant is carried the story of the vicissitudes that the nose has undergone in becoming a trunk. As I counted the enormous indented rings on our elephant's trunk, I could not but wonder if, like the rings of an ancient tree, these deep indentations might not carry some significance.

The eyes of the mtoto elephant seemed almost uselessly small, and its ears ridiculously large. It seemed as if the mere effort of flapping the ears so vigorously and so continuously would be exhausting. At least I was glad that phylogeny played no such trick on us as making us brush away flies with our ears.

When we arrived at the airport, the report was "engine trouble." "There will be no chance of leaving tonight." Reluctantly we said goodbye to Captain Hewlett who, with keen intelligence, skill, and expert knowledge of animal behavior, has so perfectly served

the needs of our expedition. Then we settled down in the colorless hotel in Moshi.

MOSHI TO JUBA

JANUARY 6, 1936

WHEN we were called this morning, at five, I felt that the night had but begun, so heavily had I slept. It was still dark. The sun had not even begun to break. The electricity had not been turned on. The candlestick held half a candle but there were no matches. When finally we emerged from the black night of our room, there stood Kilimanjaro, towering into the sky, her mantle of clouds lightly tossed to one side, her snowy peak purple in the early dawn.

At the airport we learned that the Empire passengers had luckily been domiciled at Mrs. Stevens' lovely Two Bridges Inn for the night.

For some time we stood watching the four engines warm. They did not seem to be working uniformly. A few more adjustments, however, a cheery "Right-o," and we climbed into the plane and were off on such

an early start that I think we caught all of Africa out on its early morning graze. I soon realized that when there was something interesting to see, our Captain was nodding our plane to the left or to the right, and the more important the sight, the more important the nod. We saw three groups of rhino, two lovely tawny lions, herds of eland—blue in the early morning light, keen-eyed hartebeests serving as sentinels—one from the top of a giant ant-hill, capering wildebeests, beautiful Grant's and Thomson's gazelles, herds of leaping impala, and no end of scampering wart-hogs—whole families of them, walking one behind the other, like so many little pigs going to market.

We flew so low and could see so clearly that it seemed as if we could hear not only the patterings of the hoofs but also the excited panting of hundreds of antelope as they leaped from under our plane and scattered to both sides of us as we winged our way. I felt a bit of sadness in looking down upon this beautiful Rift Valley in which we had now been twice. There on one side was Meru towering into the early morning haze, and on the other, Kilimanjaro and its eternal snows. There they were; there they ever have been; there they ever will be. It is that inalienable right to live that granite possesses that is so baffling.

As we passed over the high plateau of the velvety

green escarpment I wished that, like the circus lady who jumps into the net, I might jump onto those soft, spreading branches and once again trek those jungles of tangled vines. I know they are shining in this early morning dew. I know that the fresh high grass is tied together with sparkling cobwebs, and that Madonna lilies, purple verbenas and scarlet foxglove still grow riotously in those grassy fields.

"See—there is Oldonyo-lengai," the Sacred Mountain of God. A mountain of silver it was in this early morning light, a dazzling pyramid of changing color, whose fine ash is ever being blown by the winds. Spell-bound, half dreaming, I turned to the Chief and said, "Do you suppose we shall ever see this again?" Then I remembered the lure of Africa, how she ever calls one to trek again her limitless veldt, to see again the red-hot sun fall off the edge of the world, to feel again the chill of an African night, to hear again the chorus of lions and the answering laugh of the hyenas, and to experience again the beginning of a new day.

We reached Nairobi in time for breakfast, and by nine-fifteen were off for Kisumu at the extremity of the blue Victoria Nyanza, where we taxied in on a long run, changed planes, and stopped for an eleven-thirty tea and sandwiches, served in a small room off the huge aerodrome.

The country all about Kisumu is fertile. Kisumu is quite a military base. It is also the most important airport of Central Africa. One sees dozens of little white houses—no trees—just bare earth and little native huts in perfect configuration. I feel sure that many of the roofs of the native quarters of Kisumu are built of petrol tins, for they shine like mirrors in the sun.

A group of colorful natives was near the tea-room. One girl, hardly more than fifteen, the mother of a sturdy baby, was among them. Mother and child wore rings in their noses, rings in their ears, and rings on their toes. Pretty withal they were, with their colorful, gracefully arranged squares of cloth and dainty bead and flower bandeaux for their hair. I am beginning to think that most of our modern tendencies are borrowed from African natives. Jazz is, and so is endurance dancing. Skirts have long been scant in Africa. Bobbed heads are as old as time, while chalked cheeks, plucked eyebrows, bleached hair, painted lips, even painted nails, are old-fashioned in Africa.

From Kisumu to Kampala, whose airport is Entebbe, was but a short flight down the lovely Kivirondo Bay, and then a hop across the tip of Lake Victoria. With its many prettily wooded, green islands, Lake Victoria Nyanza reminds me of the Canadian

lakes, but no habitations skirt these shores. Here death lurks on the wings of the tsetse fly. Here entire tribes have perished—natives and their cattle—and now only the drone of insects, the call of birds, and the splash of monstrous crocodiles remain to disturb these abandoned spots of green.

Although Kampala is the capital of Uganda, it is Entebbe that will always stand out clear and distinct in the memories of the "Empire Passengers." There is an artistic quality about the little guest-house at Entebbe. Roses and bougainvillea climb over the porch, and as we stepped inside, our eyes were greeted by a long, prettily set table on which were tall decanters of fresh orange juice and dishes of tiny bananas, slices of juicy pineapple, and luscious pawpaws, while for luncheon we were served Lake Victoria fish. When leaving, we all hoped that somehow, someday, we might have another look-in at Entebbe.

Over the fertile fields of Uganda, once again, we soared, over dense forests and waving swamps filled, I know, with hippo. We crossed, then re-crossed, the Victoria Nile, flying over Masindi Port and picking up the White Nile near Nimule. Birds of every description and hue rose as we passed. Just before swooping into Juba we passed over Rejaf, which is about 3,000

miles from the mouth of the Nile. At Juba, the swamp ends and the Nile boats start their downward trek to the great Delta.

The hotel at Juba consists of two main brick bungalows, one for eating, the other for sleeping. Around the central court are grouped single guest-houses which accommodate about eighteen, but when planes are stalled, as tonight, "crisis expansion" demands accommodation for twice that number.

An Englishman told me this afternoon that he was quartered in a very commodious bath-room. The Chief and I, however, have a charming room with a porch looking out on a garden.

At dinner, it was announced that we would not be leaving early in the morning, in fact, that we might not leave until quite late. "Why," of course, was uppermost in our minds, but the First Officer was a true English diplomat and camouflaged the issue.

We had hardly finished dinner, however, before the gentleman who is housed in the bath-room said, "Did you know that we have to stay in this hole three days?" Even so, I felt we were better off than the passengers who had to spend an entire night in the desert, the plane constantly manoeuvring like a great bird for a change of air.

Further conversation brought out the fact that

there was real engine trouble, with a need of new parts: instead, a new engine had been ordered, but it could not arrive by plane before Wednesday—and today is Monday!

JUBA

JANUARY 7, 1936

TEA did not arrive until after eight this morning. We tried to head it off entirely, but apparently it is not possible to break an English tradition. At breakfast the Captain told us that without much doubt we would leave very early Thursday morning.

Juba consists of the hotel, a small military base, a few Indian stores, the wharf, and a few native houses. There is nothing to do, but it is too hot to do anything anyway. The Chief and I have sat in our room or on our porch all day with the electric fan turned on, the Chief writing, and I figuring the ratios of our various specimens. When evaporation becomes too rapid, we call for another bath and luxuriate in a truly long tub and in a shining clean bath-room.

JUBA

JANUARY 8, 1936

WE slept late this morning, worked all day on manuscripts, and drank lime juice and soda. I do not know how many people have asked us if we had a book we could lend them. There are only Sudan folders to read. All passengers are in the same predicament. They had cut baggage to a minimum, so, of course, left out books. The planes carry half a dozen books of short stories as well as writing paper, but not so these guest-houses. One Englishman was desperate as he could not even make up four for a game of bridge.

At dinner we learned that the plane had arrived from Cairo with the new engine and that all would be set for a six-o'clock start tomorrow morning.

As I was paying my "bill for chits" this evening, an Englishman, by way of opening conversation, said, "Why do so many Americans have lovely white hair?" Of course, I thought in terms of the Chief until he continued, "Now in England a woman your age would

not be gray. I wonder if it can have anything to do with your hot houses, for certainly it is a distinctive characteristic." I began to bristle, and in order to defend my gray hairs, said, "I am old and should have gray hair." However, his thesis was that the English identify Americans by their white hair, as he added, "Almost all your Senators have white hair. We English lose our hair; we get bald." I wondered how he would explain Uncle Ed!

Just before I turned in, a Scotch engineer from Johannesburg called my attention to a total eclipse of the almost full moon and to the wild beating of native drums to frighten the Devils away.

JUBA TO KHARTOUM

JANUARY 9, 1936

BY six, we were off in our big plane and flying over yellow, sandy country, sparsely covered with low, gray, thorn bush and occasional mimosa. Gradually, dry grass appeared. Being early dawn, we saw herds of giraffe, rhino, antelope, and even occasional hyenas,

all of which apparently were frightened by the plane. Hundreds of white egrets were floating on the pools of water, and from the air the white water-lilies looked like pearls embosomed on the green leaves.

We soon reached the Nile, a level stream winding in and out through the plain, like a great serpent, its banks so nearly being spilled over that one wondered how the funny old Nile steamboat chugging along, with its four side-barges of cargo, dared navigate its waters.

Across it, over and over again, we flew, the marabou storks and herons whirling in circles under our wings until we came to the high grass, the swamp, and there, not 700 feet below, were two herds of elephant, white tusks shining, their heads restlessly moving, their big ears continually flapping away the white egrets that cocked their heads as we roared by.

As I looked out straight across the plain, it resembled a flooded area. There were pools of muddy water everywhere. I scanned the water and the banks for crocodiles, hoping at least to see a splash. Occasionally we could see a native dugout filled with fishermen and could see their fan-shaped nets spread over the water. On the edge of nothing, living on God knows what, are these Nilotic tribes and their little round beehive huts. How can White Man expect to compete with an

animal so adapted to take sun, feast, famine, and infection?

We send missionaries out to Christianize them, yet, left to themselves, they have codes of morals and justice which they, as tribes, obey and revere. Does Civilized Man do more?

By eight o'clock we had left all signs of the silent Nile, and from my window I glimpsed only arid plain, brown and black, the seared areas being where the grass had been burned. Huddled together on this parched soil were groups of native huts, their shining, shallow water-holes glistening like the eyes of myriads of wild beasts.

Utter desolation! Yet these people court and mate and strive, I suppose, but do not worry. Fatalists they must be in such a habitat. Yet this desert is a compelling thing—the undulating sands, the barren hills, the distant caravans, the native huts, the ever-changing light and shadow, the piles of black rock, the chaos and mystic loneliness of it all!

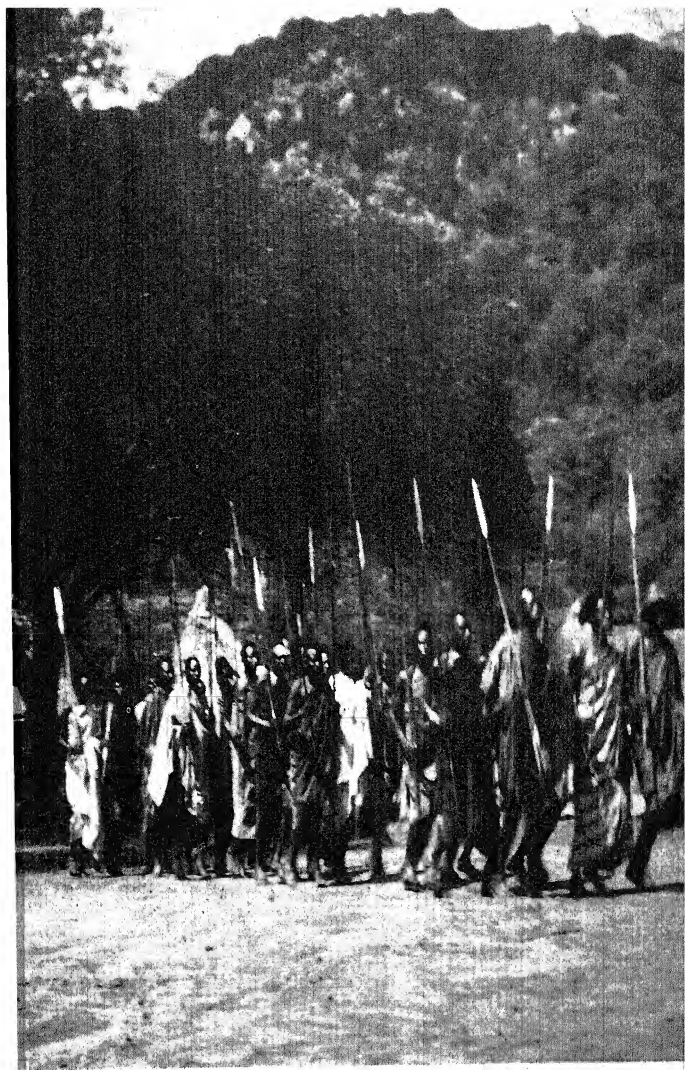
Higher and higher we flew, undoubtedly to avoid the bumpy hot air-currents, until, with a swoop, we crossed the poky chocolate-colored Nile, right over the native fishermen, then rolled along on the river bank into Malakal, a neatly arranged little town, apparently surrounded with swamps. A tent screened by a fish-

net, its roof fringed by the wind, held ten-o'clock refreshments—coffee, tea, and Huntley and Palmer biscuits.

It is interesting to see how quickly passengers become adjusted to the "No smoking on or within 150 feet of these planes." At first, the moment we stepped from the plane, someone would whisk out a cigarette, but one "I'm sorry, Sir, but no smoking within 150 feet of the plane" from an officer is enough for an Englishman. This gives one a distinct sense of security from fire.

In leaving Malakal, we saw many native fishermen with their great nets and long reed spears. These riverain people affect strange headdresses. Some apply white poultices made of cow dung, cow urine, and ashes which when removed leave the hair a coppery-red. Others rub river mud into their hair, then model it into a hooded-cobra-effect headdress, while some, by pulling out hair or by cicatrization achieve most intricate designs on the tops of their heads.

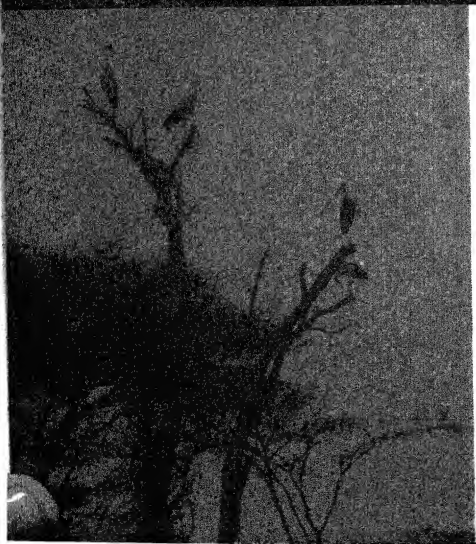
Higher and higher we climbed, bumping our way up 7,000 feet or more, until we looked out—out—over what seemed limitless plain, with only the burned, charred areas breaking through the brown. Overhead hung a soft blue sky—not a cloud—not even a wisp of white. Like an eagle in its flight, a solitary wanderer



MBULU WARRIORS



AN ANT-HILL
 PHOTOGRAPH BY
 ARTHUR B. FULLER



EUROPEAN STORKS
at Sunrise
 PHOTOGRAPH BY
 ARTHUR B. FULLER

we seemed, in this apparent emptiness of space. As the hot sun poured down its rays, the world became hazy and uncertain in the shimmering and iridescent sunlight of a tropic noon.

A delicious five-course luncheon was served in the air: Clear soup; salmon and sliced tomato with mayonnaise; assorted cold meats and vegetable salad; canned fruit and cream; and crackers and cheese and coffee. The First Officer brought me some copies of *Time*, *The Weekly News Magazine*, two and three weeks old, but they contained news to us and I read aloud most of the morning. Later, when I told the First Officer how much I had enjoyed reading them, with great dignity he replied, "I subscribed to *Time* for a whole year, but I never read it." I wondered if he felt its presentation of news too informal for an Englishman.

By half-past two, all vegetation had vanished. Not even an occasional tree remained. Brown sand, flat as the river bank, occasionally lined off by mud fences into corrals, was all that could be seen. No wonder native man domesticated the cow and dog and goat and sheep in this lonely plain.

For tea-time we were in Khartoum. A quick run by motor took us out to the lovely hotel on the Quai. I walked for a while along the Quai where the boatmen

were lazily punting their sailing junks past the beautiful estates facing the water-front. A General's great fenced-in mansion, a Lieutenant's low Italian villa, the Governor's house, palaces indeed. England needs to look powerful in Egypt.

For some time I walked behind two strangely-garbed priests—Coptic possibly, not Mohammedan, with long curls, amusing fringed whiskers, but beneficent countenances. They were conversing earnestly, undoubtedly discussing international problems, as over and over again I heard the words, "America," "Italy," "England"—our own problems too!

KHARTOUM TO ALEXANDRIA

JANUARY 10, 1936

AT one o'clock this morning we were called. In utter darkness over the seemingly dead desert we flew. It was cold and gray-looking. As the pale silvery moonlight faded, slowly the world came into color and being in the rising dawn; the big red sun, like a ball of fire out of the sea, reaching higher and higher

until even the last strands of moonlight were turned to rose in the morning's glow. It was as if a rainbow had encircled the entire horizon. Again the Chief and I noted that it was on the reflected side that the delicate turquoise blues and pinks lingered longest and contrasted so appealingly with the limitless stretch of yellow sand.

An English woman correspondent joined us this morning. She has been in Addis Ababa and Libya. She is pretty, with an Italian cast of countenance and figure, and, in spite of a rather hazardous experience, she is still feminine enough to cream and rouge and powder her face, darken her eyes, curl her lashes with little brushes, curl her hair, make a red Cupid's bow of her lips, and paint her nails a brilliant carmine, before us all this morning. I could not but wonder at what o'clock in the early morning one's sense of humor awakens!

As we neared Wadi Halfa, the wide green valley of the Nile came into view, and hundreds of little plots under cultivation by the natives. The river was dotted with islands, and near the banks we could see patient camels turning the age-old water-wheels, and occasional natives with long spears in their hands.

At Wadi Halfa we stopped for a seven-o'clock "English breakfast." The hotel is charmingly situated in

the midst of a grove of palms, extending right to the water's edge. Though luxuriant in its tropical vegetation, we found it quite too cold at Wadi Halfa to want to linger long.

We had barely settled ourselves again in our seats when the beautiful rock-hewn temples of Abu Simbel blazed into view. It seemed as if every ray of the great Egyptian sun illumined the imperturbable countenances of those colossal images of Rameses II. As we winged our way, rocky hills and an occasional gorge of black basaltic rocks appeared on either side. Just before reaching Assuan, there below us was the beautiful Temple of Isis, slowly drowning in the Nile.

Again, over Luxor, our art-minded pilot flew low and we saw perfectly even the color on the pillars of mighty old Karnak.

We are flying over Assuit now, the largest city south of Cairo. Here the Nile Valley expands to a width of ten or more miles. Nowhere is the cultivation of the valley so impressive as here.

As we near Cairo, the Nile, as though tired from its long journey, flows slowly. It is thick and muddy-looking and is dotted with small boats. The wide valley, as one looks down upon it, resembles a green checkerboard. Clusters of tiny mud huts make brown patches in the green.

There are many pyramids. I can count fifteen from my window, and beyond, in the sands, are the "tenantless tombs" of the ancient kings.

I have found following the Nile, from its source to its delta, more interesting than following it from its delta to its source, so obviously is it a stream of life. I like to think of it as one first sees it as it issues from Lake Victoria Nyanza—a small shimmering stream which gradually widens and spreads, gathering to itself the mud and silt of the sandy stretches, its great tentacles reaching out to engulf everything within its grasp, giving life and taking life, passive, then turbulent, its muddy banks supporting herds of antelope, elephant, hippo, and crocodile, and its sheer cliffs holding the remains of ancient kings. First, as a toddling infant, it weaves its uncertain course, then like restive youth, it outgrows everything, until as a self-conscious adolescent, it draws to it life and beauty—birds upon its bosom, native villages on its banks, trees and flora—becoming in its maturity the sustenance of Egypt, and in mellow old age, spreading its emerald green delta into channels of wisdom and experience.

At Cairo, we stopped for Turkish coffee and then changed planes, taking the plane for India as far as Alexandria.

The Chief has not been well since leaving Juba.

He has slept much of the time today. This afternoon he complained of feeling cold. That, however, did not seem unusual as most of the passengers had been wrapped all day in their blankets.

I took his temperature, and it was subnormal. He moved over into the sunshine, hoping to get warm, when suddenly he had a severe chill which lasted the entire distance between Cairo and Alexandria.

It was a long drive to the Hotel Cecil, where our rooms were waiting for us, but our Captain most considerately arranged for us to go by a private car rather than by bus.

When Dr. John Mitchell, physician and surgeon to the Imperial Airways, called, he immediately asked, "Where have you been, and what have you been doing the last ten days?" to which I replied:

"For five weeks we have been in a supposedly malaria-free district. We saw no mosquitoes, yet always slept under nets and in screened huts. We always wore high boots and long sleeves.

"Ten days ago we went to Ngaruka, a native village on the edge of a marsh. We were there at midday, when no mosquitoes are supposed to be about. January 3rd we left camp and spent the night of the 3rd, 4th, and 5th at Arusha, where we slept under nets.

There is malaria in Arusha, but this is not the malaria season. Saturday, January 4th, Dr. Crile performed an operation at the Government Hospital in Arusha where, of course, there are always cases of malaria.

"When we took the plane at Moshi, some of the passengers had colds and were sneezing and coughing. One passenger had such a sore throat that the first thing he did in Nairobi was to go to a 'chemist's shop' for some medicine.

"Dr. Crile was feeling splendidly when we arrived in Juba Monday afternoon. Tuesday we worked in our room until the late afternoon, when we walked down to the river and back. Wednesday morning he seemed tired, but wanted to finish the writing he had undertaken. In the afternoon he slept. It was frightfully hot. About five, he complained of being cold. I took his temperature and it was 101 degrees.

"We consulted Dr. A. Royland Hunt, an able young Scotchman, who was inclined to think that we were in for an attack of "flu." Dr. Hunt took a blood smear, but it was negative for malaria.

"In Khartoum the next night we saw Dr. R. M. Humphreys. He too made the diagnosis of "flu" and found the blood test negative for malaria. Both Dr. Hunt and Dr. Humphreys advised getting on if pos-

sible to Alexandria, feeling that we could control the temperature more or less with aspirin. Then the chill occurred on the plane today."

To Dr. Mitchell, the chill and the fact that we had been in Africa indicated malaria. He suggested that we start malaria treatment at once. So we cancelled all reservations with the Imperial Airways and settled down to the task in hand.

Dr. Mitchell warned us to use our mosquito-nets in Alexandria and not to open our windows at night; but getting out from under my mosquito-net and getting under the Chief's to do something for him, was just like getting all snarled up in fish-nets. Having packed for airplane travel, I had only a light silk bathrobe which was like tinsel on a winter night; so I used my polo coat, and when the Chief needed that too over him, for it was extremely cold, I wrapped myself up in an extra blanket. Babes in the Wood were we, with our kits, filled with everything we could have used, shipped to America or given to the hospital in Arusha or to Mr. Fuller and Dr. Quiring to take on the chimpanzee hunt, since we expected to be in London in four days, where we could procure anything we required.

For days, the most active treatment for malaria failed to control the temperature, and two more blood

tests proved negative. Constantly the Chief turned over in his mind the problem of malaria. How could he have contracted it? The only thing he did that I did not do was to hunt the elephant. The only time he could have been bitten by mosquitoes was the day we dissected the elephant, when we did not leave until after dark. But Mr. Fuller, Dr. Quiring, and I were there too.

Finally we telegraphed to see if Mr. Fuller and Dr. Quiring were ill, and when we received word that they were well and had left for Uganda, Dr. Mitchell and the Chief became more than ever doubtful of the malaria diagnosis and more certain that the problem was some complication of "flu."

ALEXANDRIA

JANUARY 13, 1936

FOR several days Dr. Mitchell has been tied up with the inquest of the City of Khartoum disaster. He doubts if the cause of the loss of that seaplane will ever be known.

All of our meals here at the hotel are served from a little kitchen on our floor. The service is perfect. We can have anything, at any hour of the day or night, and everyone is interested and sympathetic.

ALEXANDRIA

JANUARY 14, 1936

WHEN we arrived in Alexandria, the Chief said, "The first thing I want to do is to sign all my Express Checks. If I should be very ill, I might not be able to do so." So he signed half of them. That other half has been a constant worry to him; so this morning, after a dreadful night of constantly mounting temperature, he signed the others. It was all I could do to keep my equanimity.

Thus many days and nights have passed. Blood tests show no malaria and malaria treatment does not control the fever. Surely, then, malaria can be ruled out, in which case the chill must indicate a complication of "flu." But what kind of a complication, is my constant query.

From the Hotel Window

Our two balconies look out on the great sickle-shaped breakwater, a section of the Alexandria harbor. Further down, the harbor is filled with the English fleet, and so crowded is it with great ships that one wonders how even landing space for a seaplane can be found. Along the sea for miles is a beautiful esplanade edged by a high wall, on which often the long-gowned natives walk.

In the silence of the night there is the constant droning of airplanes high overhead. Often I get up to see if I can locate them in the dark sky, but only the twinkling stars and the lights of distant ships give any companionship in the night. Yet those droning planes give comfort. They too are on the watch. I draw near the Chief's bed and count his respirations, so much faster than they should be, and seemingly so shallow. Then I whisper to him to turn over on the other side for a while. Thus passes the night.

As the day breaks, the monotonous song of the Oriental at his task falls on my ear, and peace-giving and solacing it is. Somehow it wraps, almost enfolds one, in the reposeful feeling of unburdening of responsibility. I wonder if that is the psychology of reli-

gion? I find myself listening to these droning native chants and gaining from them the same feeling of peace that steals over me in a great cathedral as I listen to the chanting there.

I go to my balcony. There is the long line of funny old one-horse victorias. All day they stand there, the patient horses automatically filling the gaps when a horse moves on. And the drivers, where are they? Praying. One by one they take their turn on the straw prayer-mats thrown down on the sidewalk. And not only the drivers, but passers-by, shoppers, children, laborers, all stoically facing the East, praying, slightly bowing, then abjectly prostrating themselves over and over again, touching their foreheads to the ground. I wonder if it would do me any good? Would it clarify my anxiety? The very fact that it arises in my mind only shows how difficult is reason, how normal, how human is the cry for faith!

As the sun comes up and sends its warm rays into the little garden at our feet, the benches begin to fill and people from all classes, looking just as if they had gone to the linen closet and pulled out old tablecloths and bed clothes and had wrapped them around themselves, are sitting on the benches, sunning themselves—just like snakes or chameleons.

ALEXANDRIA

JANUARY 15, 1936

EARLY in the morning, a fat, cheery Greek came in with a little box, to take another sample of blood.

Again there was no evidence of malaria, and paratyphoid also was ruled out.

All day today I knew that the Chief was turning over much in his mind. He constantly shifted position and occasionally took eight or ten long breaths as if he were trying to keep his lungs used, to their very depths.

Late in the afternoon when Dr. Mitchell examined the Chief, he hesitated over one spot, going back to it over and over again. When he looked up, he said he thought we should go to the hospital!

Just the thought of a hospital and of English Nursing Sisters who know how to do things was comforting to me, to whom it is almost a problem in geometry to get the left slipper on the left foot while the patient is still in bed.

ALEXANDRIA

JANUARY 16-18, 1936

THE ambulance arrived at eight. Four big, swarthy Turks came to our room, silently unrolled a hammock-like litter, spread it on the sofa, motioned to the Chief to lie down on it, wrapped blankets about him, and carried him downstairs.

The ambulance was comfortable, and the most brigand-looking of the attendants and I rode in it with the Chief.

The Hospital

The Anglo-American Hospital is a large new building. Dr. Mitchell, who is the outstanding surgeon of Alexandria, is the head of it and is responsible for its organization. His secretary sits in the front office. When the secretary is not on duty, a Mohammedan is supposed to be; but I have never hunted for the Mohammedan that I did not find him asleep on the window shelf of his little cubby-hole.

English Sisters, sent out on two-year contracts, do the nursing. Egyptian probation nurses serve under them, but there is no training school for nurses in Alexandria. The Egyptian nurses, however, are a very necessary part of the hospital as they speak the native languages.

Morning and evening, the Chief enjoys the ritual of Mohammed. The anointing with oil which Mohammed dispenses with his massage, the Chief says, is slowly giving him the imperturbability of an Oriental.

All of our meals are prepared in a small kitchen on our floor. They are brought in to us by the cook herself. She is hardly more than five feet tall, and figureless save for a breadth of about two feet. Yet withal, in her tennis shoes through which three toes on each foot are peeping, she moves so without motion—gliding as it were through the long halls, tray high over her head—that she always arrests my attention. She reminds me of the cook who brought in the pie of black-birds to Old King Cole!

From the Hospital Balcony

The great French windows of our room at the hospital open onto a wide and roofless balcony, upon

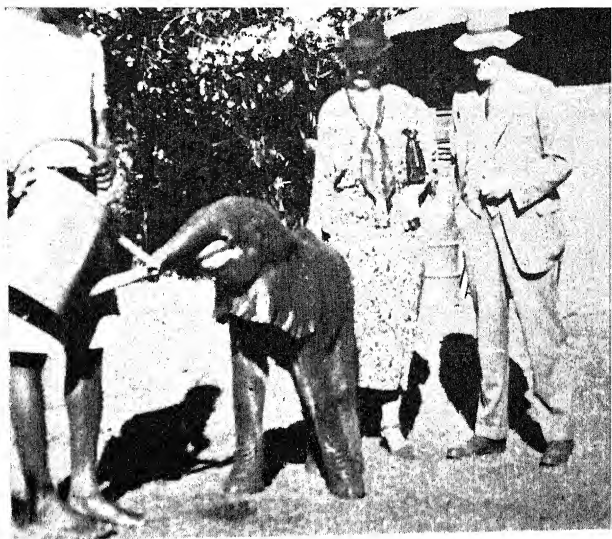
which the sun pours down its comforting heat. And one needs it in Alexandria, for although the sun is bright, it is only warm when one is basking in it. The slightest shadow gives one gooseflesh!

A Venetian blind shades our window. During the day the Chief wants it down as the bright light increases his headache. At night we have to keep it down as the night air in Alexandria is not only damp but brings mosquitoes. Fortunately the ceilings of the hospital are high and the corridors so cold that there is plenty of air in the room.

The immediate grounds of the hospital are prettily laid out with flowering bushes and trees, but right across the street is a large and many-winged yellow building—the prison. From my balcony I can see dusky faces behind the barred windows, and can almost hear the tread of the sentries as they march back and forth outside the prison walls.

In the far distance I can see the blue sea; otherwise, my view is largely one of over the roof-tops, and over the roof-tops of a new Alexandria, as this seems to be a new section of the city.

Just to one side of the hospital is the railroad, and on it one sees trains drawn by engines, some of early vintage, others of most modern type. The gates of this railroad are always down. Whenever I see the



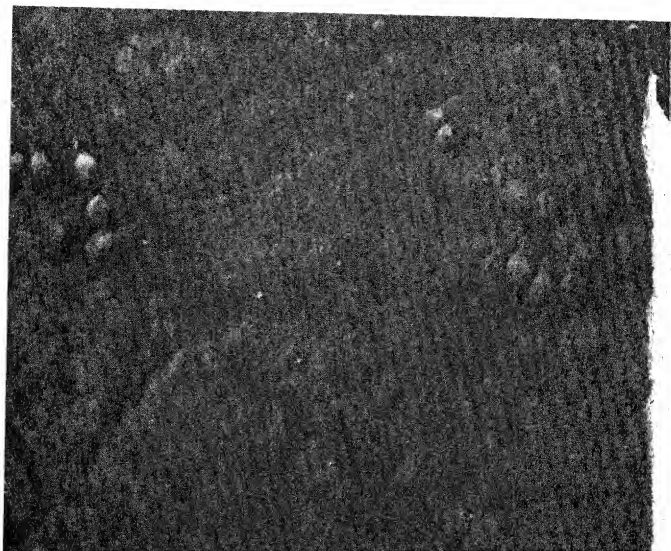
THE ELEPHANT MTOTO

PHOTOGRAPH BY CAPT. J. RAYMOND HEWLETT

MARKET DAY *Along t*

PHOTOGRAPH BY ARTHUR B.



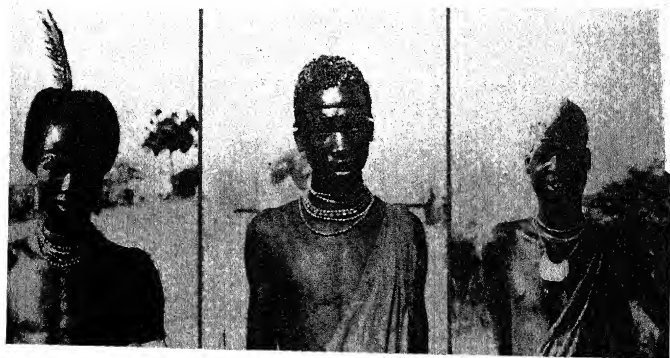


EPHANTS *from the Air*

PHOTOGRAPH BY COURTESY OF IMPERIAL AIRWAYS, LTD.

COIFFURES OF SHILLUKS *Near Malakal*

PHOTOGRAPH BY ARTHUR B. FULLER



gatemans, he is tucked away in his little house eating a picnic lunch. Perhaps it is in order to gain seclusion for his meals that he keeps the gates down.

But what a motley crowd waits at those gates—all squatting in the dust! Where do they come from? Where are they going? Why do they bring their food and come in great family parties and squat in the dirt and dust and eat by the railroad?

Letters today from Mr. Fuller and Dr. Quiring have carried us right back into the cooling shade of the thick jungle. The letters were written from Masindi, Uganda, where they have been hunting chimpanzees in the great Budonga forest. They wrote that the trees in this forest are 150 feet or more high, and that the undergrowth is so thick, the only way they can penetrate the forest is to follow the elephant trails.

At one time, Mr. Fuller said there were about forty-five chimpanzees about him. Although he could not always see them, as they were in the underbrush, he could tell by their barks and screams and bickerings where they were and about how many there were. Some were in the high trees, running upright along the huge branches. As they grasped the boughs and pulled themselves up higher into the trees, they looked as large as men. One lazy fellow was indulging in a morning siesta. He was stretched, full length, on a

fallen stump, lolling there in the sunshine. Mr. Fuller and Dr. Quiring collected a male and a female. The male weighed 115 pounds, the female 96 pounds.

From the point of view of evolution, it was interesting to learn that although the body-weights of the male chimpanzee and our bushbuck were the same, the brain of the chimpanzee weighed twice as much as the brain of the bushbuck.

The Streets of Alexandria

Although I have been in Alexandria a week, I know nothing of the city. I know that throughout its long history it has always been considered a foreign city. When Alexander founded it in the fourth century, he made it so. He made it Greek. But there is nothing left of Alexandria's ancient monuments—not even Pharos, the great lighthouse, once one of the seven wonders of the world. Instead, a modern city greets one's eyes.

The shops show a Parisian influence. One would have to go into the byways to hunt out Oriental shops. Yet Arab and Greek, Turk, Egyptian, Syrian, and Nubian consort here.

The Chief wanted some American gum. To buy it, I had to go to a tobacco shop. When buying py-

jamás, the inquiry was, "English or Indian made?" Upon examining the two makes, I found that the material was the same, the model the same, and the stitching, so far as I could distinguish, was the same; but the price of the English pyjamas exceeded that of the Indian by more than one-third.

Dr. Mitchell told me of "sour milk" or Yaout, a delicious native dish, made by bringing a cupful of milk to the boiling point, then, after it has been placed in the receptacle in which it is to be served, stirring into it one teaspoonful of absolutely sour milk. The strange part of the recipe is that after it is well mixed, one has to put not only a lid over it, but a blanket around it, for six hours. It is made fresh each day at delicatessen shops, is put up in little pasteboard boxes, and is most palatable.

When buying newspapers one morning in a large book shop, I found all business suspended by a native who, wrapped to his knees in a dirty and ragged cotton square, was, with strange incantations and mutterings, attempting to swing a small incense burner over patrons' heads and at times actually placing it on their hats or heads.

I thought he was probably a bit demented, so quietly stepped to the back of the store to be out of his way. He went from clerk to clerk, from patron to

patron. They dodged the smoking ashes, but he, with his prayers and Allahs, continued to sprinkle holiness upon each in turn.

Fearing I was going to be cornered, I came out from cover and said, "What is that man doing? Can't anyone be served while he is here?" The clerk replied, "Oh, those are morning prayers he is saying. It is very nice. Wouldn't you like it?" But I declined, and as he seemed intent on the morning ritual, I decided to try my luck at buying morning papers further down the street.

But wherever I go in Alexandria it is always the same. I have never seen people so distasteful to me as the native people one sees here. Out in the "blue" one sees naked humanity, but it is fit. It is lithe, beautiful in its proportions and in its muscular development; it is up against all sorts of odds, but it survives by sheer fitness.

Here one sees flabby fatness swathed in black, or almost naked starvation clad in tatters. Many of the older native people and the very young children have sore eyes, but they do not even bother to brush away the flies. Occasionally one sees handsome young native women on the streets, but they too have a fancy for black.

Half of the women's faces are covered, and orna-

ments of gold, bone, or wood flatten their noses. Their black garments sweep the dust. One feels that they never wash and that they wear their garments until they fall from them. The Masai women who hand down their cow-hide garment from one generation to another and who wade in cow dung, do not seem so dirty to me. Their naked skin at least has contact with the air.

ALEXANDRIA

JANUARY 19, 1936

AT last Dr. Mitchell feels that we are overcoming this "flu." Each day the Chief attempts a bit more—sitting on the balcony, walking in the corridor, striking out a bit in diet. The nurses are tireless in their efforts, and Dr. Mitchell's cheering visit is the anticipated hour of each day.

ALEXANDRIA

JANUARY 22, 1936

WE had intended leaving the hospital yesterday, as the plane was to leave early this morning, but yesterday morning the representative of the Imperial Airways telephoned that the plane had been held up in leaving Brindisi; that it could not make Alexandria, and remained at Athens for the night. So we decided to remain in the hospital one more day, and it was not until this afternoon that we returned to the Hotel Cecil where we found our old room awaiting us.

At the tea table this afternoon and at the coffee table after dinner, we were impressed by the fact that everyone about us was chatting seriously. Everyone seems worried in Alexandria. Mussolini has a large concentrated force in Libya, and England is constantly throwing more troops and ships and planes into the Mediterranean. There is a feeling that sanctions will be pussy-footed and that while the members of The League of Nations cogitate, Italy will march on.

ALEXANDRIA TO BRINDISI

JANUARY 23, 1936

WE were called at five and had a real breakfast—not just tea—before leaving our room.

As we reached the harbor, dawn was breaking and we had an amazing view of the fleet-filled harbor as we taxied slowly around some of the big destroyers, past some of the great airplane carriers, in and out among the cruisers, before we gathered sufficient speed to shower our windows with spray, making us feel that nothing could keep us from going under. Suddenly we felt the plane lift, the windows cleared—"we are up," "look, there is a submarine below us," like a great porpoise just coming up to breathe!

I am told there are over fifty-eight of England's fleet still in this harbor, even after the Hood and some of the others have left for no one knows where. England has over 50,000 of its naval and air force concentrated near this area, and more are pouring in continually. Mombasa also is to be made into a base.

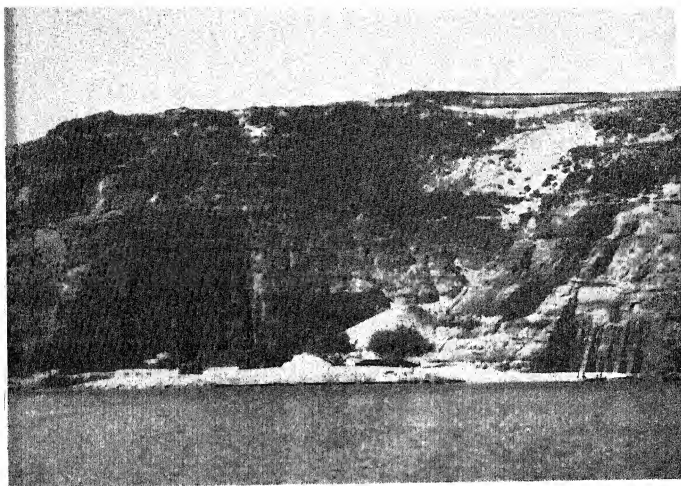
I confess to a bit of a qualm on starting on this leg of our journey. The City of Khartoum disaster gives

us a feeling of uneasiness. When we came to Alexandria on the City of Khartoum, we were several hours late yet we had no worry as to gasoline. It was because the Captain and the crew inspired such complete confidence. These dauntless young navigators of the air are worthy representatives of the heroic explorers and adventurers of all the ages, and like them are adding page upon page to the romantic history of all time. So, in spite of the uneasiness felt before boarding the Scipio, now that we are in the air I have a feeling of utter security.

The cushions in the seats of these seaplanes are life preservers. I just tried one on, but it took setting-up exercises to get it adjusted. In the English planes, passengers are not required to fasten belts, in fact, if there are belts attached to the chairs, we have failed to find them.

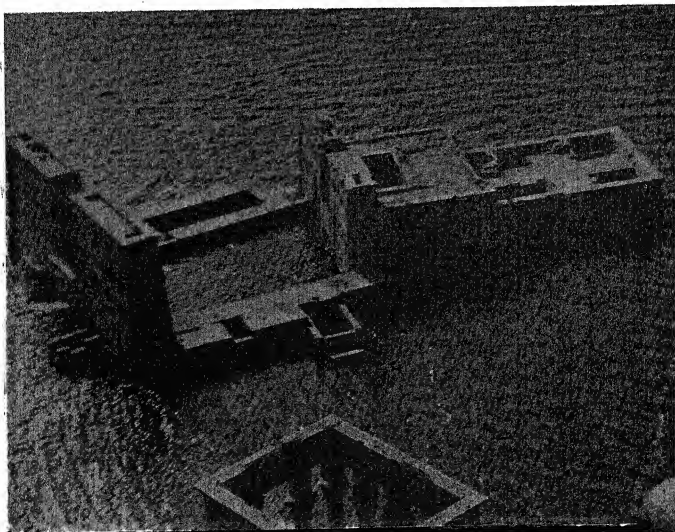
The pretty little chromium-walled lavatories on all the planes are most complete in their appointments. One finds really good soap and dainty little towels, each separately wrapped in cellophane. I would not be surprised if, tucked away in some niche, there was powder for one's nose!

We are flying now not more than 150 feet from the water. It is almost like looking out upon the water from the deck of a high steamer.



THE ROCK-HEWN TEMPLE OF ABU SIMBEL
PHOTOGRAPH BY ARTHUR B. FULLER

THE TEMPLE OF ISIS
PHOTOGRAPH BY COURTESY OF IMPERIAL AIRWAYS, LTD.





A CHIMPANZEE
from the
Budonga
Forest
PHOTOGRAPH BY
ARTHUR B. FULLER

The Imperial Airways have been most considerate. Owing to the fact that our stop was due to illness, no charge was made for breaking our journey, and preference for further passage was given to us over all but Cape passengers. So this morning we find midship seats allotted to us, and a steward most solicitous about our welfare.

When making this trip out from Brindisi to Alexandria, the sun was gorgeously bright and the Chief and I wore dark glasses all day; but today it is cloudy. The sea is in an entirely different mood. It looks cold and relentless, as if it would show no mercy, and one is reminded of the risk of this long flight over the sea.

Mid-morning broth and sandwiches, a delicious lunch, and even supper, were served to us in the air today. I was glad to see the plastic tableware of the Imperial Airways again. The diminutive pitchers, salt-and pepper-cellars, and mustard pots tempt me to gather souvenirs!

Tea-time found us again at Crete where the Captain of the Imperial Airways yacht was a gracious enough host to welcome us back again. While we were sipping tea on the deck, I noticed strange squares of color—red, tan, pink, gray, blue—spread on the shore. They were not tents. They extended right to the water's

edge—dozens of them. Donkeys were grazing near and women seemed to be busy at something. Curious, I turned to the Captain for an explanation, and he said, "There at the water's edge is a small fresh spring emptying into the sea, and people come here from a distance of many miles to do their washing." So today is blanket-washing day in Crete.

After leaving Mirabello, Candia, perched high upon a cliff, came into view. Behind towered the sharp peak of Mount Ida, the very name of which brought to mind terrifying legends of Minas and his Minotaur, while in front, guarding the harbor, was Standia, built upon a great rock in the sea.

As the crinkled cliffs of Crete faded to gray, we headed across the Sea of Candia into the brilliant Aegean. Melos, Siphnos, Kythos—but it is impossible to identify these hundreds of rocky islands—melancholy ghosts of a historic past.

Four thousand or more years ago it was that explorers and traders and pirates sailed this sea. On these islands arose the beginnings of Greek civilization, yet today, as I look over this great expanse, not even a lone fisherman skirts these shores.

As we neared Athens, though it was late, the sun shone gorgeously. We flew so close to the Acropolis that we could count the pillars of the Parthenon, and

the golden glow of the setting sun enhanced the mellowed beauty of its ancient marbles.

There have been only seven of us on the plane today, three of whom are from India. One is a Major who has just come from Quetta. He was ordered there after the earthquake. He says Quetta is ruined beyond recovery. There is no Quetta. It was an army center, but now the entire barracks are destroyed and the problem for weeks has been not only where one could live, but where one could even pitch a tent.

Another passenger from India is an interesting English lad, of about seventeen. His family live in Delhi. He had not been home for eight years, and the new air service to India is all that made it possible this year. Already he has the Englishman's attitude regarding the White Man's burden. The road of civilization will never tempt him. The lure of a little constituency all his own already thrills him. And he will have the power of command. A wonderful training it is, to be born a Colonial, and as a lad to become sensitive to the problems of English rule, then to be educated and trained in the Mother Country, to the Empire point of view, only to go back again and serve the Mother Country in some part of the Empire. It is just that interlocking of interests that binds the loyalties of England and her colonies so tightly.

The third passenger from India is a young English-woman who has been visiting her sister, who teaches in one of the large Mission Schools.

This afternoon, I fell into conversation with a delightful old skipper. He has been on the sea for years and is at present stationed in Alexandria. He says that of the 50,000 naval and airmen that England has in that sector, not one has seen less than twelve years' service; and he contrasted that with Mussolini's newly drafted young army. He feels that should Italy win the war in Ethiopia, it will take years to subjugate the Ethiopians.

One reads constantly in the papers of the student troubles in Cairo. In Alexandria this morning's paper carried headlines of new student revolts in Cairo and the overthrow of a government; but, as in the case of France, governments come and go, but after all there is no real change in government. So students revolt in Egypt, but when one sees one of the revolts as I did one night from my window in Alexandria, one realizes that it means little beyond a chance to dozens of native people to have a motor ride and sing and carry banners.

We reached Brindisi shortly after dark. In the Customs Office a surly-looking Italian soldier took advantage of his position. In a commanding voice, he

said to every man as he stepped into his office, "Take off your hat." Though surprised and, I think, a bit amused, everyone obeyed.

We went to the hotel for dinner and, at eight, boarded the train, where we found our two compartments beautifully warm and made ready for the night.

As we were pulling out of Brindisi, we saw several troop trains, and fathers, mothers, younger brothers and sisters, with bundles of fruit, books and gifts, lingering in their goodbyes. As soldiers, the lads looked very young.

BRINDISI TO PARIS

JANUARY 24, 1936

IN retrospect today, the Chief and I have been re-trekking the Trail of Civilization. On this long journey from our jungle laboratory, we have flown from the site of one ancient civilization to another. We have touched the great valley where Libyan and Semite met and founded not only the cradle of civilization but the cradle of our civilization as well. We have seen Alexandria which in its zenith surpassed all other Greek cities. We have glimpsed Crete and

Athens, long the classical centers of the ancient world. We now are on our way to Rome, whose tentacles of power once not only reached far into Asia but gripped Britain as well. Then onward to Paris, the ancient city of the Gauls, long the center of Art and Philosophy, and again on, until we reach mighty Britain whose power reaches round the earth.

Thus, from the greatest concourse of animal life, as seen in Central Africa, we are carried on the wings of that which has been wrought by Man's imagination to the greatest concourse of human life—the great cities of Rome, of Paris, of London, and of New York. From the greatest known energy-yielding soil in the beautiful Rift Valley, we are carried to the Ruhr of our own America—Cleveland, Pittsburgh, Detroit, Akron—perhaps one of the greatest energy-yielding centers of the world, industrially. Here there may no longer be the heave and song of a unison-energy effort as in the days of the building of the Pyramids, but just as surely today as then is it due to a unison-energy effort that the imaginative flights of Man become the realities of tomorrow.

PARIS TO LONDON

JANUARY 25, 1936

EARLY this morning we rolled into foggy, mist-ridden Paris. We were hurried out of the train into an Imperial Airways bus and were driven to the Ambassador Hotel for breakfast, where Dr. and Mrs. Welti met us and stayed with us until we left, Mrs. Welti tucking into my hand a gorgeous orchid and into the Chief's a deep red carnation.

Reported fog in London, as well as fog in Paris, cheated us of flying to London, so again we missed seeing the Bourget Flying Field. Instead, we entrained for Folkestone and took the steamer to London, along with Anthony Eden, in his black hat; the representative of Roumania, and many other meticulously dressed representatives, going to King George's funeral.

We arrived in London just as Big Ben was tolling five o'clock. The evening paper boasted that London had had five-tenths of an hour of sunshine that day.

Travel-worn and dusty, our shoes torn by the desert sands, still wearing our big safari coats, and the Chief his cap, we drove to the Hotel Carlton, where the handsome liveried Porter, bowing low, said,

“Good evening, Sir. I presume you have returned for the King’s funeral!”

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